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# INFANTRY SCHOOL
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## Containing the Latest Thought on Infantry

Volume XXXIII, Number 2

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*W. A. Burress, Commandant,*
*and*
*under the supervision of*
*Brigadier General W. P. Shepard,*
*Assistant Commandant*

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CONTRIBUTORS
Colonel Frank Ward, *Infantry*
Lieutenant Colonel Charles R. Meyer, *Infantry*
Lieutenant Colonel Elmer W. Schmierer, *Infantry*
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Sergeant First Class James F. Quinn

Original art work by Private Alfred M. Russo

DIRECTOR OF PRINTING
Lieutenant Colonel Albert C. Haley

CIRCULATION MANAGER
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## The Development of Vertical Attack

The military world awakened to the importance of vertical attack in 1935, when Russia released a short, dramatic, film-record of her airborne arm. Six years before release of this film—(1929)—Russian Paratroops had created world-wide interest when they appeared before a carefully arranged audience of foreign military attaches who were witnessing the Soviet Army annual maneuvers at Veronezh and Moscow.

Russia's purpose in releasing documentary proof of her airborne strength was undoubtedly to discount the significance of the Herman Goering *Fallschirmjager* (Parachute-hunter) Division organized in 1933. The Soviet Army demonstration as recorded on film, included the air-transportation of an entire infantry division including light artillery pieces. This accomplishment by the Russian Army sent the major European nations into a mad scramble to establish similar airborne units.

The Italian Army used parachutes to supply her troops in the attack on Abyssinia and later, during the invasion of Albania, the Italian Army utilized aircraft to transport a regiment from Taranto to Tirana, a distance of 150 miles.

The efficiency of airborne training in Germany was tested by participation in the Spanish Civil War. An airborne unit operated under the Condor Legion of the German Expeditionary Force in Spain.

By 1938 the French had organized one battalion of "Infanterie de L'aire" which was stationed at Versailles, but this unit was unaccountably disbanded in 1939 before it had an opportunity to demonstrate its efficiency in combat.

The United States and Great Britain had both incorporated airborne training in their Armies by 1940. These airborne elements were later to play a major role in toppling the citadel of Fortress Europe.

## EVOLUTION OF THE PARACHUTE

Vertical descent has long intrigued mankind. The history of the development of the parachute device is a fascinating story of fact and legend. There is some evidence to support the belief that the first practical attempt to master the art of vertical descent began with the invention of the parasol (umbrella). Ancient manuscipts discovered in the historical archives of Pekin, China reveal that acrobats used to thrill spectators by drifting down from great heights, suspended from huge parasols.

Legend relates that in the year 875 a monk, Casim, successfully utilized a parachute device from a hill (presumably a cliff). An interim of 185 years passed before legend recorded another instance of verticle descent. This time (1060) it was another monk, named Oliver, who made several jumps from a monastary tower with a parachute device.

In the writings of Roger Bacon, England's 13th century philosopher, there are several references to parachute devices. Two centuries later in Italy the inventive genius of all time, Leonardo da Vinci, drafted his conception of a parachute device. It was to be a huge tent-like contraption with a canopy of caulked linen fixed over a stout wooden 36 by 36 foot pyramidal framework. Like many of da Vinci's inventions, the device was purely theoretical, and never progressed beyond cleverly drawn plans.

The earliest authentic mention of a parachute device in use was made in a book written in 1618 by Simon de la Loubere, who recorded that the ruler of Siam often enjoyed the antics of court tumblers who thrilled his entire court by descending from high places by means of two parasols attached to their girdles.

The development of the parachute began in earnest with the advent of the balloon. Andre Garnerin (1767-1823) of Paris demonstrated the first practical parachute device. Twenty-three feet in diameter, Garnerin's parachute was wooden framed, covered by white canvas, and conformed in shape to the modern canopy. This parachute was attached to a balloon and was released when sufficient altitude

(2,000 feet) was reached. The first drop was made near Paris on 22 October 1797, with a dog as the first passenger. Although the device oscillated wildly during descent, the dog descended safely in the small wicker basket. Later, Garnerin himself made many successful parachute descents.

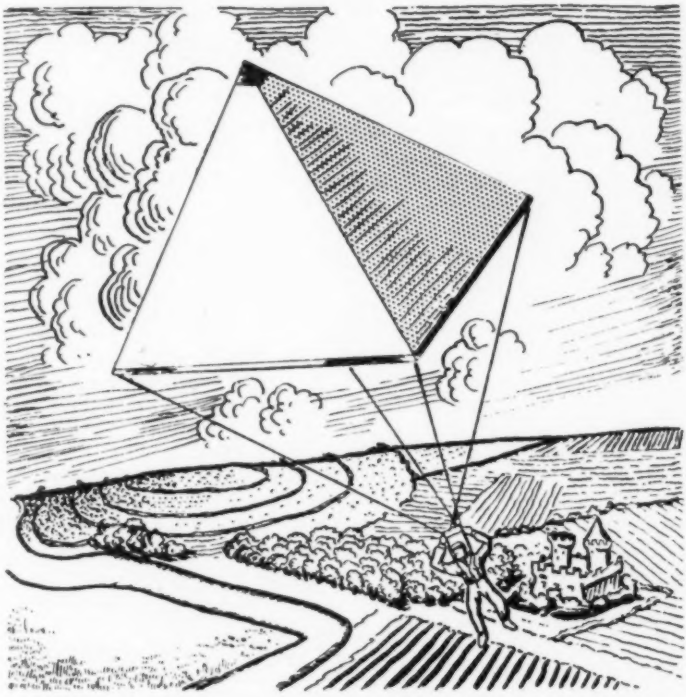


FIGURE 1.—Da Vinci's parachute.

Attempts to break away from the conventional design of parachute devices often led to the construction of weirdly shaped contraptions which, more frequently than not, caused the death of the inventor. The most startling parachute design was that of Robert Cocking (1777-1837). Cone-shaped and extremely unwieldy, this parachute was designed to check oscillation (pendulum motion) during descent. Oscil-

lation of the early type parachutes presented a serious hazard to the parachutists while landing, by swinging the jumper in tremendous arcs and smashing him with violent impact to the ground. Cocking's cone-shaped parachute was constructed with a framework of hollow tin tubing and weighed, with attached passenger basket, about 570 pounds.

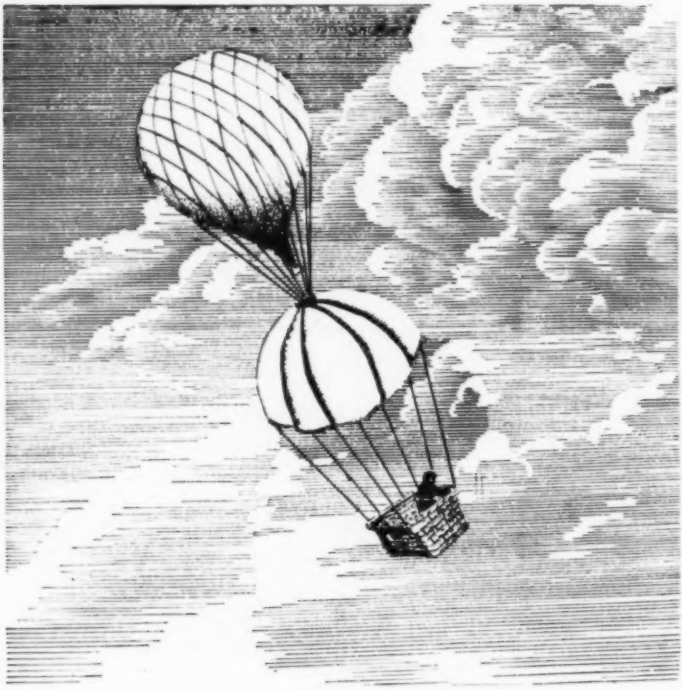


FIGURE 2.—Ganerin's parachute.

On its trial release from a balloon at 5,000 feet the framework collapsed and Cocking met his tragic end. Later experiments proved that the device was entirely impracticable.

At first, the parachute device was considered a circus attraction. Balloonists all but ignored its use as a safety device, featuring it in exhibition jumps to publicize carnivals, fairs, political rallies, and other similar gatherings. How-

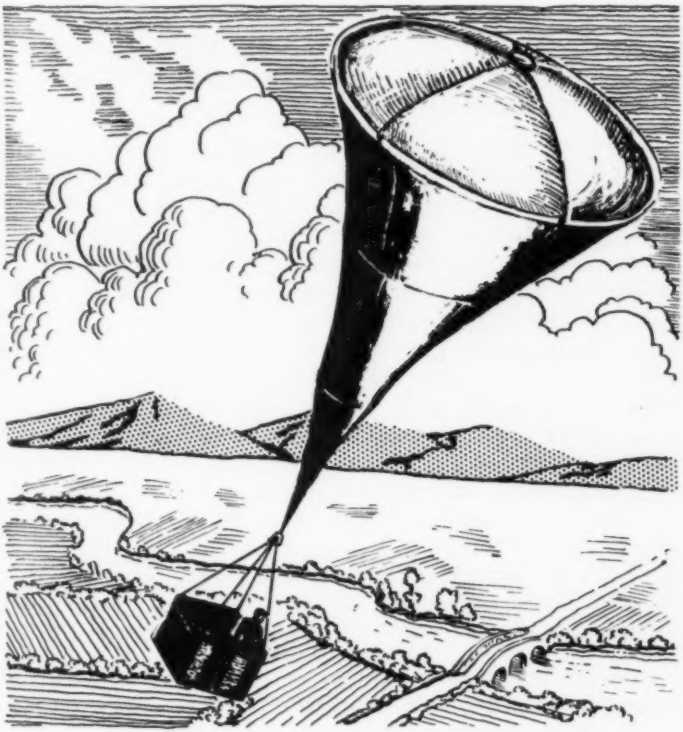


FIGURE 3.—Cocking's parachute.

ever, there were several instances where its life-saving characteristics were demonstrated. One well known recorded use was the escape of a Polish balloonist, Jadaki Kuparento, from a burning balloon on 24 July 1808.

## DEVELOPMENT OF THE PARACHUTE

The parachute slowly evolved as a safety device with the development of heavier-than-air craft. Although it is not clear who actually made the first use of the parachute in a jump from a powered aircraft, credit is generally given to a stunt man, Grant Morton, who jumped from a Wright biplane at Venice, California early in 1912. Morton carried the parachute loosely folded in his arms, and threw it into the air after he cleared the plane.

The first use of the pack-type parachute is credited to U S Army Captain, Albert Berry, who leaped from a Benoist biplane over Jefferson Barracks, Missouri, on 1 March 1912. The parachute used by Captain Berry was not actually a pack-type, but rather a packed type, as the canopy was stowed in a metal cone and held by breakcords. The cone was tied to the front wheel-skid of the plane and a life-line ran from the suspension lines stowed within the cone, to a belt and a trapeze bar, which supported Berry when he jumped from the undercarriage. Further demonstrations of the packed-type, or Stevens parachute were made in the fall of 1912 by Rodman Law, who leaped from a Wright biplane. A girl aerial stuntist made several jumps in 1913, featuring a similar type parachute developed by the aeronautical pioneers Glenn Martin and Charles Broadwick. Even with these conclusive demonstrations of life-saving potentialities, the stigma of exhibitionism stifled the use of the parachute by both military and civilian pilots.

During World War I, very few Allied army pilots carried parachutes because they considered it an unmanly reflection on their courage to do so. However, after widespread publicity had been given to an Austrian pilot's parachute escape from a burning plane over the Russian front in the fall of 1916—with a Heineke parachute, a curious sack-like affair—many Austrian and German pilots began carrying them. Numerous escapes from disabled aircraft were reported, and soon few Austrian or German pilots would go aloft without one. Throughout the war, the Allied pilots

generally refused to carry parachutes in their planes, despite the fact that they were offered as standard equipment by the U S Army as early as August 1917.

After the war two United States parachute pioneers, Floyd Smith and Leslie Irvin, continued their efforts to perfect the parachute. The War Department became interested in their experiments and sponsored their efforts. Official experimentation got under way in 1919 at McCook Field, where two automatic-type parachutes were tested. One, attached by its container to the plane, was to be withdrawn by the weight of the jumper's body on leaving the plane; the other, a pack-type chute worn by the jumper, was opened by an anchor cord attached to the plane.

The automatic type parachute proved unsatisfactory after numerous tests, and the project bogged down until Smith and Irvin hit upon the idea of a free-type parachute to be released by the jumper after he had cleared the plane. The free-type parachute was an instant success. Test after test was completed without failure or malfunction, and after slight modifications, a standard model was developed. This model was twenty-eight feet at the skirts and made of straight-cut pure silk. It had forty panels, forty shroud lines, and a forty-inch vent at the apex of the canopy, which was controlled by thick rubber bands. It was packed in a back-type pack.

Strangely enough, pilots continued to be reluctant to accept any type of parachute despite several air disasters which took the lives of all involved. It required a near disaster to awaken airmen to the value of the device. On 20 October 1922, a United States Army pilot, Lieutenant Harold B. Harris, ran into trouble test-flying a Loening monoplane over McCook Field. The plane suddenly plunged out of control into a steep dive tearing the wing surfaces to shreds. Harris fought clear of the cockpit and attempted to open his free-type parachute. His ignorance of the parachute's operation caused him to pull on what he mistakenly thought was the rip cord until he was not more than five hundred feet from the ground. Realizing his error in time, he pulled on the proper release and descended to the ground

dazed but unhurt. This near-tragedy was witnessed by several hundred Army Air Force personnel who subsequently campaigned whole heartedly for the parachute as an item of standard equipment.

The wearing of service-issued parachutes was required of all Army and Navy flyers by order of the War Department in 1924. Shortly after this, the Irvin parachute was adopted by the British Air Forces.

## EARLY AIRBORNE EFFORT

Had World War I not ended in the fall of 1918, the world would have seen a full-scale airborne attack in 1919 rather than twenty-one years later. General Billy Mitchell summed up the Allied situation this way:

> With the coming of the winter season a grand offensive against the Metz sector was prepared by the Allied and Associated powers. But, guarding the direct pathway to this old-world city, was division after division of the crack troops of the German Army, anticipating our every move. To take Metz by foot soldiers could have been accomplished, but at tremendous loss of time and men; so, the American Air Force was ordered to smash that human wall which barred the direct road to the objective.

To overcome the "human wall which barred the direct route," General Mitchell proposed:

> That an infantry division be assigned to the Air Force. That we arm the men with a great number of machine guns, and train them to go over the front in our large airplanes which would carry ten or fifteen of these soldiers. We could equip each man with a parachute, so that when we desired to make a rear attack on the enemy, we would carry these men over the front lines and drop them off in parachutes behind the German lines. They (the Air Force) could supply them by aircraft with food and ammunition. Our low flying attack aviation would then cover every road both day and night, so as to prevent the Germans from falling on them quickly, until they could organize their positions. Then we could attack the Germans from the rear, aided by our army on the front, and support the whole maneuver with our great air force. This is perfectly feasible.

General Mitchell asked for and obtained the promised use of forty squadrons of Handley-Page bombers, each squadron consisting of thirty planes—a total of 1,200 in all. Thus,

with 12,000 airborne soldiers General Mitchell intended to smash German resistance at Metz by a vertical attack.

The plan was approved by General John J. Pershing, and General Mitchell organized his staff, with Major (later Lieutenant General) Lewis H. Brereton as his operations officer, but before the plan could be put into effect the Armistice ended hostilities.

The airborne effort did not die with the end of World War I. An enlisted man, Master Sergeant Erwin H. Nichols, who had served in General Mitchell's command, devoted himself to developing the theory of vertical attack. Due to Sergeant Nichol's efforts a public demonstration of airborne technique was arranged at Brooks Field, Texas, on 29 April 1928. In this demonstration six enlisted men jumped from six de Haviland biplanes, and a machine gun was dropped from a Douglas transport. Shortly after they landed, the men set up the machine gun and opened fire.

The second airborne demonstration was arranged by General Mitchell in October 1928 at Kelly Field, Texas. Here a mass jump demonstrated how six men could jump from one plane, land, and within three minutes have their machine gun in operation.

A further demonstration was arranged by Nichols the following year. This demonstration was witnessed by the military attaches of several foreign countries, as well as an American contingent headed by Major General Stephen A. Fechet, then chief of the Air Corps. German Colonel Fedor von Brock (later Field Marshall) rushed from Fort Knox where he had been witnessing maneuvers to attend this demonstration. Eighteen de Havilands and three Douglas transports participated in this second demonstration. At 2,000 feet, eighteen men jumped from the de Havilands, while simultaneously, from 3,000 feet, 38 containers carrying Lewis machine guns were released from three Douglas transports. In exactly four minutes, the parachutists had the machine guns in operation.

## EUROPEAN AIRBORNE EFFORT

The theory of vertical attack was received enthusiastically by Russia and Germany and both powers began extensive experiments shortly after receiving reports of the American demonstrations. Russia displayed paratroops prominently during her annual army maneuvers at Veronezh in 1929, and the results were so impressive that the paratroop operation was repeated at Moscow one month later.

In 1933 Germany revealed the crack Herman Goering Parachute Battalion which had been carefully selected from her finest soldiery. Each parachutist was physically perfect and highly trained in all phases of infantry tactics. The men were imbued with a fanatic pride in their unit, and were considered to be the best troops in the entire German Army. Their pride was fostered by the German High Command with special pay and privileges. Each member of the elite unit swore to accept death before dishonor, as evidenced by the following translation of their official creed:

1. You are the elite of the German Army. For you, combat shall be a fulfillment. You shall seek it out and train yourself for any test.
2. Cultivate true comradeship, for together with your comrades you will triumph or die.
3. Be shy of speech and incorruptable. Men act, women chatter; chatter will bring you to your grave.
4. Calm and caution, vigor and determination, valor and a fanatical offensive spirit will make you superior in attack.
5. In facing the foe, ammunition is the most precious thing. He who shoots uselessly merely to reassure himself is a man without guts. He is a weakling and does not deserve the title of Parachutist.
6. Never surrender. Your honor lies in Victory or Death.
7. Only with good weapons can you have success, so look after them on the principle—first my weapon, then myself.
8. You must grasp the meaning of an operation so that, should your leader fall by the way, you can carry it out with coolness and caution.
9. Fight chivalrously against an honest foe; armed irregulars deserve no quarter.
10. With your eyes open, keyed up to the top pitch, agile as a greyhound, tough as Krupp steel, you will be the embodiment of a German Warrior.

## VERTICAL ATTACK IN WORLD WAR II

Vertical attack against an enemy was first employed by Russia in Finland when white-clad Russian paratroops were dropped behind Finnish lines with some success in 1939. However, the impact of "hordes of Russian paratroopers" against Finland as promised by Soviet Army leaders, never materialized. It is presumed that lack of adequate air transports denied the full utilization of paratroops, as the Russian paratroops were employed primarily in ground force roles.

German airborne troops were used with striking success against Holland and Belgium early in 1940 to quickly overcome strategic objectives, thus opening the way for the main attacks by ground troops.

The German over-all strategy was to draw the French-British Armies northward into the low countries by rapidly overrunning Belgium and Holland. If successful, this would expose the flanks of the French-British Armies to a German attack to be launched from the Ardennes.

The key to a successful attack against Holland lay in a quick seizure of strategic bridges. On the east, the Dutch border was defended by few fortifications worth mentioning—the Dutch relying on the broad mouths of the Rhine and the Maas Rivers to provide natural barriers. The Germans succeeded in taking the bridges by audacious use of her parachute troops on 10 May 1940.

Simultaneously with the airborne attack on the bridges spanning the Rhine and the Maas, German ground forces attacked the Peel Line (see figure 4). By 13 May this force established contact with the airborne troops and by nightfall all key bridges were in their hands.

In Belgium the Germans again demonstrated the value of vertical attack— this time with glider-landed troops. In the semi-darkness of pre-dawn, a number of gliders landed on the superstructure of Fort Eben-Emael and quickly destroyed its guns and ammunition. The nearby Belgian fortresses of Pontisse and Barcho, which commenced firing on the silenced fort, were rendered inactive by waves of Stuka

dive bombers. Within 24 hours the entire garrison of Fort Eben-Emael capitulated.

The successful attack on Fort Eben-Emael resulted in the capture of the two key bridges with but little effort. The bridge guards were surprised in their dug-outs in the early hours of the morning and wiped out. The Germans, having crossed the Dutch border at 0500 on the 10th, also

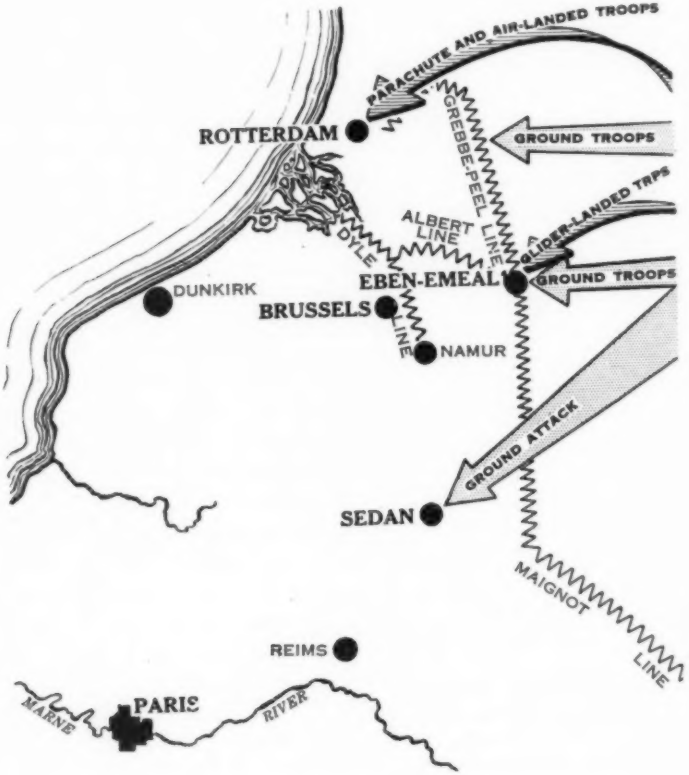



FIGURE 4.—Employment of German Airborne Troops in Belgium and Holland in 1940.

crossed the Belgian border, in spite of its fortifications and other obstacles, only a few hours later.

Although airborne troops were used by the Germans in other operations on the Western Front, they were never again employed in an area which had more strategic and tactical importance.

## JAPANESE AIRBORNE EFFORT

Parachute training of Japanese Army and Navy personnel began in early 1940 with inauguration of a six months training course under German supervision. However, serious efforts toward creating a parachute corps were not made until the fall of 1941, when one hundred German instructors arrived to train an estimated 14,700 trainees in nine training centers. At the outbreak of the war Japan had two parachute battalions ready for employment in paratroop operations.

On the recommendation of the German instructors, the training of the Japanese Army parachutists was cut to a period of two months. The naval training period was made unaccountably brief, with the parachutists receiving only two weeks of intensive training. Personnel in both the Army and Navy parachute units were under 28 years of age, and were carefully selected from infantry, engineer, and communication troops. The men were volunteers and received extra pay and privileges. The Japanese found parachute training difficult to assimilate. A study of their training doctrine indicates that trainees were constantly subjected to strong emotional stimulation. This psychological aspect, combined with a number of faults in training techniques, was probably responsible for the unsual number of injuries and fatalities sustained in Japanese training maneuvers. In one exercise where 400 men were dropped, 12 parachutists were killed outright and many others seriously injured.

The Japanese paratroop units did not fare any better when employed tactically. In February 1942, a Japanese parachute battalion was committed to seize and hold an airdrome and two refineries at Pladjeo and Soengi in southeastern Sumatra. Transported in 70 planes bearing

RAF markings, the battalion was dropped over the Palembang area in two waves of 350 men each. Intense antiaircraft fire not only forced the pilots to drop the men from an excessive altitude (above 600 feet) but also destroyed 16 of the planes. The paratroops were widely scattered and were never able to reorganize and concentrate against the objectives. Piecemeal attacks were beaten off by the defenders, and by the time Japanese seaborne reinforcements arrived, only a few scattered remnants of the original force were left.

On 6 December 1944, the Japanese made their last airborne attack. This operation was an attempt to neutralize airstrips on Leyte, Philippine Islands, and involved the use of approximately one battalion of parachutists. The major effort was to be made against the Buri, San Pablo, and Bayug airstrips, while smaller groups of paratroops were to attack the Dulag and Tacloban airstrips. The mission was to destroy or cripple so many American aircraft on these strips that no serious air opposition would interfere with the landing of seaborne Japanese reinforcements on Ormoc Bay the following day.

Captured orders indicated that the plans for the destruction of airfield installations were thorough and detailed. Paratroop leaders were furnished with aerial photographs of the airfields showing the location of the main installations. All troops were thoroughly briefed on the general plan, and evidently had been rehearsed at their home base. Plans for deception were not overlooked. Seven dead Japanese removed from a plane at Tacloban were found to have either US Army or civilian clothing under their regular uniforms.

Between two hundred and three hundred paratroops reached the ground alive in the Japanese attack. Of one flight of 51 planes containing transports, bombers, and fighters, antiaircraft destroyed 18. Some of the transport planes evidently lost their way as reports were received of paratroop landings at remote localities. The bulk, however —an estimated 20 planes loads—descended in the vicinity of San Pablo and Buri airstrips. By actual count, 124

paratroopers, compactly grouped, were located along a north-south line just west of San Pablo Field, while about 80 enemy paratroopers landed at Buri. At San Pablo the dropping had been preceded by bombing and the laying of a smoke screen.

By 7 December the paratroops had been driven from the San Pablo Field into a pocket of resistance near the Buri airstrip, where they held out for several days with a few survivors of a Japanese Infantry Division. One battalion of another Japanese division launched an attack to reinforce the airborne attack, but the paratroopers had been destroyed before this maneuver began.

At the same time the attacks on the Dulag and Tacloban airstrips failed completely. Two transports flew over the Dulag strip and one dropped about five paratroopers and crashed; the other crashed about a mile northeast of the field. Over Tacloban, two medium bombers converted into transports attempted to land. One was shot down and the other crashed.

By 12 December, six days after the opening of the attack, all Japanese paratroops had been killed or accounted for. The Japanese airborne attack had failed miserably. A Japanese convoy which attempted to put into Ormoc Bay to reinforce the airborne elements was destroyed by planes from Tacloban on 7 December, even while American amphibious forces were taking the beach the Japanese had selected for their landing.

## U S AIRBORNE EFFORT

The airborne effort in the United States developed slowly. As early as May 1939, the War Department proposed to the Office of the Chief of Infantry that a small unit of air infantry be organized. Definite action was started when the Chief of Infantry was authorized to make a study on the feasibility of organizing an air infantry, and the practicability of transporting all types of ground troops by air. The Chief of Infantry was assigned the responsibility for conducting tests, and actual organization was begun on 11 June 1940. The Commandant of The Infantry School, Fort Benning, Georgia, with assurance of the full coopera-

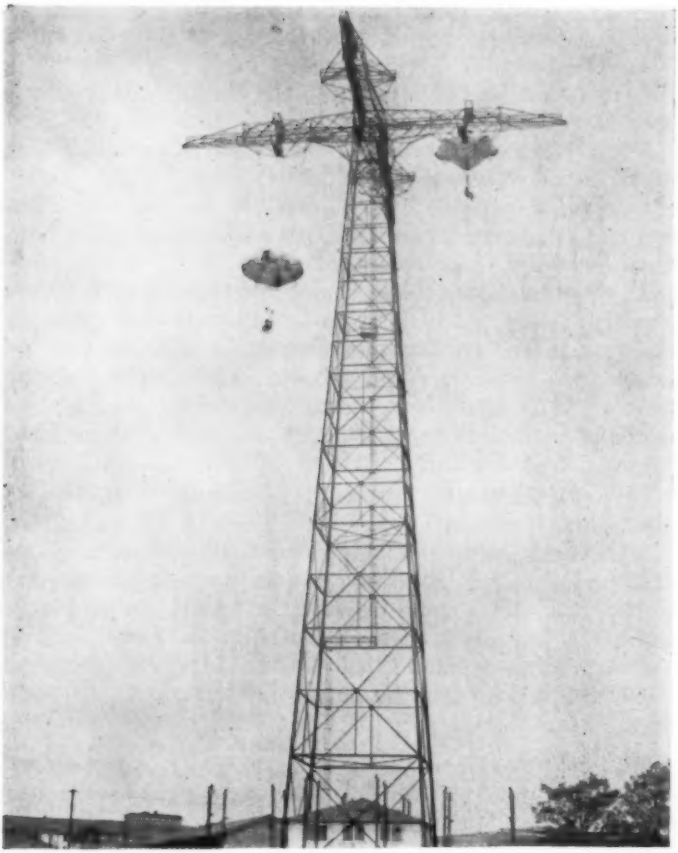


FIGURE 5.—Two types of parachute drop towers are used for training parachutists. The control type tower (illustrated) lowers the parachute by a cable. The free tower releases the parachute from the top of the 250-foot tower.

tion of the Army Air Corps, was directed to organize and train a "Parachute Test Platoon," with personnel selected from the 29th Infantry Regiment, then stationed at Fort Benning.

The Parachute Test Platoon was activated on 25 June 1940 and organized with 2 officers and 48 enlisted men, all volunteers from the 29th Infantry Regiment. Selection of personnel was based on the highest standards of mental and physical characteristics.

Eighteen days after organization, through the efforts of Lt Col (later Major General) William C. Lee, the test platoon was moved to Hightstown, New Jersey, where they were trained from the 125-foot parachute towers which had formerly been an attraction at the New York World's Fair. The results were so satisfactory that similiar towers were installed at Fort Benning.

The installation of the parachute drop towers greatly facilitated training of parachutists. The trainees immediately accepted the parachute as a comparatively safe means of transportation, and training progressed with spirit and determination.

The first jump from a plane in flight by these fledgling Army Paratroopers took place 16 August 1940 at Lawson Field, Fort Benning, from a Douglas B-18. Each paratrooper wore the standard T-4 Air Corps parachute and an additional test-type emergency chute.

On 29 August 1940, the first mass jump by U S Army Paratroops was made by the Test Platoon over Lawson Field, Fort Benning. The operation was completely successful.

Less than three months after activation of the Test Platoon, the 501st Parachute Infantry Battalion was organized with members of the original platoon as a cadre. With the activation of this first tactical parachute unit, interest in airborne training became more evident, and special training facilities, jump towers, and a better jumping area were provided. High priority was given the airborne project and new jump areas were cleared to accommodate the increased number of volunteers.

FIGURE 6.—Trainees practice jumping technique and get a shock similar to the opening of a parachute by training on the mock parachute tower.

Further progress in airborne training was made with the organization of the first airborne infantry battalion on 10 October 1941. This new airborne unit was designated the 88th Infantry Airborne Battalion, and it was given a primary mission of developing cargo glider techniques in air-landed operations.

The activation of the Parachute School on 15 May 1942 initiated one of the greatest projects for mass training of specialists in the United States Army. Over 650,000 officers and enlisted men have been graduated from this unique training center. At the end of World War II, the U S Army contained five airborne divisions and four parachute regiments. Many other qualified parachutists were assigned to special organizations such as the OSS.

## MASS EMPLOYMENT

In May 1941, one year after their successful invasion of Norway and the low countries, Germany achieved what seemed the impossible—the assault and capture of the strongly defended island of Crete. On 20 May 1941, a German airborne force containing approximately 800 bombers and fighters, 500 to 650 transport planes, and about 75 gliders, attacked the island. The British Royal Air Force could give little opposition. Surprised by some 30,000 German airborne troops strongly backed by superior air support, the British-Greek defenders were quickly overrun. Those who could not flee the island by boats were killed or captured in a few days. Although the German losses were high—approximately 50 per cent—the invasion was successful, and proved that a strongly defended base could be captured by vertical envelopment.

The first large-scale operation involving British airborne troops took place during the North African campaign in November 1942. Their attack on the Bone and Oudna airfields, designed to assist the French in routing the Germans from Soukel Arba, is said to have marked a turning point in airborne tactics. Improvement in training methods greatly increased the effectiveness of vertical attack. Airborne troops were trained with aircrews and aircraft specifically assigned to carry out a specific operation. Aerial

FIGURE 7.—A mass jump by a parachute infantry battalion.

supply was greatly improved by redesigning supply containers and aerial supply aircraft. Some heavy equipment was dropped with the troops.

The D-Day invasion of Europe was somewhat hampered by bad weather. At 0020 hours, 6 June 1944, groups of parachutists equipped with electronic homing devices and radios were dropped on predetermined drop zones to guide the main airborne forces. The main forces arrived at 0100 but because of bad weather, parachutists and gliders were dispersed over a wide area. Even so, the wide dispersal of paratroops confused the Germans as to the location of the main attack and thus delayed counter-invasion measures against Allied seaborne forces.

In September 1944, the newly organized First Allied Airborne Army attempted to seize and hold vitally important bridges at Grave, Nimegen, and Arnhem in the heart of the German defenses. These attacks were in conjunction with an Allied move against the German right flank, which was based on the North Sea in Dutch territory. This flank was protected by the lowlands, estuaries, and canals formed by the Meuse and Rhine rivers and their branches. The operation began at 1015 on 17 September, and all airborne troops reached their initial objectives as planned. The 82d Airborne Division reached the Meuse River at Grave on the 19th and secured the bridge intact, later establishing contact with the Second British Army advancing overland. At the same time, other units of the 82d Airborne Division firmly established themselves at Nimegen securing the bridge over the Waal River. The British airborne forces dropped at Arnhem, however, were enveloped by enemy forces. Although they fought with great gallantry, superior enemy forces had all but destroyed them by 25 September, and the remnants were forced to withdraw.

The Germans made one last attempt to turn the tide of war with the assistance of their airborne forces in December 1944. This effort, involving the night dropping of approximately 1,000 parachutists, was expended without effect in the Bastogne area during the Battle of the Bulge. Handicapped by ignorance of the Allied positions, only 300

men of the entire force reached their objective. These were quickly killed or captured before they could do much to slow the Allied counteroffensive.

For weeks prior to the Rhine crossing the German positions were intensively bombarded by air and long-range artillery. The initial drive across the Rhine was made by river crossing. Some three hours after the beginning of the ground force attack, however, the airborne forces began landing by parachute and glider. These airborne forces quickly fell upon the German Rhine defenses from the rear, completely demoralizing the Germans, and thus making the Allied crossing a complete success. Over 1,500 powered aircraft and 1,300 gliders were involved in this final airborne operation.

## SUMMARY

Vertical descent has slowly evolved through the centuries from a device used to entertain the courts of emperors and kings, to a universally accepted method of descent which has aided man in his never-ending conquest of the air. The parachute has played a vital role in the development of the air as a common medium of transportation.

All modern nations now incorporate parachute and airborne troops as an integral part of their armies, and these troops will continue to play an important role in shaping the future course of events.

# Duties of a Division Chief of Staff

(Unit Executive Officer)

Colonel Able, the division chief of staff, glanced at his wrist watch and noted that it was 1050—still ten minutes until time for his daily conference with the division commander. Enough time to look over the notes he had made when visiting the staff sections earlier in the morning, he thought. Picking up his memorandum pad, Colonel Able reread his notes:

1. G-3 reports that a division liaison officer found that one of the regiments was not following the training schedule. The division liaison officer told the regimental S-3 that in the future no deviations in training schedules would be made without authority from division. A few minutes later the regimental commander called the chief of staff and informed him that he had personally authorized the deviation, and, "incidentally, who's running this regiment?"

2. G-2 reports that Lieutenant Gabby, a censorship officer in a rifle company, was overheard discussing with other officers the family difficulties of a private in his company. The G-2 believes that Lieutenant Gabby learned the details of the affair from a letter written by the private.

3. The division quartermaster reports that one of the regiments is using more gasoline per day than the other two regiments combined.

4. An assistant in the G-4 office reports that one regiment has 46 boxes of equipment lying on the ground even though division issued lumber to build storage platforms. He also reports that all of the officer's tents in that particular regiment have wooden floors.

5. The division surgeon told the G-1 that one regiment has sent an average of 42 men per day to the division clearing station while the other regiments are sending only an average of 18 men per day. Of the 42 men sent on the previous day, the surgeon said 23 were treated for skin rashes. The other two regiments sent only three men each for similar treatment. The division surgeon believes that most of these

skin rashes can be treated equally well at battalion aid stations.

6. A report from the provost marshal's office states that the G-1 was stopped for speeding in a jeep.

Put yourself in Colonel Able's job for a minute. Assume that you have been the chief of staff of this division for six months and that you know the division commander's policies. Which of these matters would you bring to his attention at the daily conference?

As Colonel Able ran over each of the items in his mind, he decided that the incident concerning the liaison officer should be reported. (It should also be corrected; the G-3 should straighten out the liaison officer on the proper method of dealing with the regiments.)

He decided not to mention the report on Lieutenant Gabby. The incident, he decided, should be brought to the attention of the regimental commander informally and if a breach of confidence had been committed, disciplinary action could be taken by the regimental commander.

The chief of staff decided not to mention the excess use of gasoline at this time because he did not have sufficient information to make a full report.

For the same reason, he decided not to mention the 46 crates lying on the ground. He did, however, instruct G-4 to get sufficient information so he could make a full report to the commander on the following day.

He decided that the commander should know about the situation reported by the division surgeon. He had already instructed the G-1 to have the division surgeon visit the regimental surgeon and talk over the matter, but at the same time, he felt that the division commander might want to mention the matter to the regimental commander.

He decided not to mention the matter of the G-1 being stopped for speeding. Unless the G-1 was a flagrant violator, disciplinary action in this case was within the chief of staff's province and besides, he hadn't yet heard the other side of the story.

Possibly you don't agree on all of these decisions, and rightly so. The actions of a chief of staff or an executive

officer are necessarily based on the authority delegated by the commander. One commander may insist that every matter be brought to his attention; another may allow members of his staff to make many decisions in his name. Colonel Able and his commander operate on a policy midway between these extremes.

## QUALIFICATIONS OF A CHIEF OF STAFF

Let us consider Colonel Able as well as many other chiefs of staff and make a composite picture of an ideal chief of staff. By taking those characteristics which are common to most of them we can build up an individual that any commander would be happy to have as a chief of staff. The same qualifications also apply to an executive officer for a regiment or battalion—the primary difference being that a chief of staff must have a broader background in staff and command functions.

*Professional fitness.* The chief of staff must be professionally qualified to pass critical judgment on staff plans and orders. He deals with experienced officers among the staff and commanders, and since he is the leader of the staff as well as the representative of his commander, he must be able to meet the staff and unit commanders on an equal plane.

*Experience.* This does not mean experience as a chief of staff but refers to a combination of experience as a commander of troops and as a staff officer. The chief of staff should appreciate the effect on the troops of poorly-timed or ill-conceived staff action, and thus avoid a common pitfall. Naturally he must understand the problems of the troops and be aware of the obligation of the staff to the troops.

*Loyalty.* The chief of staff must be loyal to the staff members and to the unit commanders. He represents them fairly before the commander, is concerned with their interests, and helps them in every way possible. Probably one way in which the good chief of staff best demonstrates loyalty is his method of handling people who have made a mistake. Mistakes we have always with us. Theodore

Roosevelt said, "People who never make mistakes are people who never do anything." The chief of staff frequently will have to remedy other people's mistakes and he must handle these cases in such a sympathetic and understanding way that he saves the offender's face, strengthens his loyalty, and improves his work.

*Common sense and judgment.* Common sense is the ability to evaluate a set of related factors and determine their relative importance; judgment is the ability to consider the factors and arrive at a logical conclusion. Accurate judgment and common sense are achieved through constant effort to gain knowledge and through intelligent application of that knowledge. The chief of staff must be able to apply logical methods of reasoning and arrive at sound conclusions.

*Courage.* The chief of staff occupies a position that requires him to present some recommendations to the commander which may be contrary to the desires of the commander. There will be occasions when he must correct impressions which the commander has received and which the chief of staff knows to be erroneous. He will frequently find himself going to bat for a staff officer or a unit commander.

To the chief of staff falls much of the unpleasant duty of pointing out to officers their failures and shortcomings. He does this fairly and frankly, and in such a manner that he improves the work of the officer and strengthens the unit.

*Leader.* The chief of staff must be a leader. Leadership is the art of imposing one's will upon others in such a manner as to command their obedience, confidence, respect, and wholehearted cooperation. He must know men. He is in a position to secure results by forcing action, but he uses this only as a last resort. His task is to produce action at top efficiency, which means that his people must be working for a common goal.

*Worker.* The job of the chief of staff requires hard work. The flow of papers across his desk is fed by some twenty staff sections. This requires an organized routine to save

time and effort, so that he can devote his attention to matters of importance. He must be an avid collector of information, which means that he must read many reports and make many visits to staff sections and to troops. He must be able to read rapidly, seeing the salient points of a paper in order to insure that it fills the requirements, conforms to policy, and is well phrased. He must have a good memory in order to check papers for accuracy without losing time in looking up reference matter.

*Driver.* If you have been led to believe the chief of staff accomplishes his task by being only a smooth psychologist and a ray of sunshine, correct that impression here. He must have iron in his makeup, for there come those times when he must drive already exhausted people to further effort. Some day, when a staff is just about out on its feet, orders will come which make it necessary to require further concentrated effort. Having trained his staff to produce without being driven, he can then drive them without mercy, and with full assurance that they will accomplish the task in the required time.

*Good listener.* The good listener is that rare individual who is able to see the viewpoint of the other man. He is the one who realizes that other people have good ideas, valuable information, or something to contribute. Everybody likes a good listener for all of us like to talk—that ego of ours urges us to take the center of the stage, to be the important person. The chief of staff is a seeker of information. He needs so much information which he can not collect through his own time and effort that he must get it from his staff and the troops. They must feel free to talk to him. If he is a good listener it will encourage the staff to talk to him without restraint and thus keep the information flowing to him.

Here we have the characteristics of a good chief of staff —actually nothing more than a brief listing of those personality traits which are common to many successful chiefs of staff. If you are a commander in search of a chief of staff you will do well to evaluate your candidate against these criteria; if you want to be a chief of staff, examine

your own qualifications to see how well you fit the picture.

The specific duties of a chief of staff are listed in Field Manual 101-5. This listing, however, gives no indication of the manner of performance of those duties. We'll approach the discussion of the duties of the chief of staff from a less academic viewpoint and try to arrive at some concrete conclusions. For purposes of discussion, the duties can be divided into three categories: duties in which he assists the commander; duties in which he acts for the commander; and duties in which he coordinates the actions of the staff.

## CHIEF OF STAFF ASSISTS COMMANDER

One of the most important actions in assisting the commander is to conduct routine business so that the time and effort of the commander may be devoted to important matters. In this respect the experience and judgment of the chief of staff are important, for before taking a matter to the commander, the chief of staff must decide whether it is of sufficient importance to warrant the commander's attention.

A chief of staff can save much valuable time for a commander. He does not present half-developed or erroneous plans, directives, or orders to the commander, but presents them in such form that they can be promptly approved or disapproved. The chief of staff recommends concurrence or nonconcurrence on such matters, and gives a reason for his recommendation.

The commander frequently seeks advice from his chief of staff. A chief of staff does not habitually agree with the commander just for the sake of agreement, but carefully considers all of the factors before giving advice. Here is a case in point:

> During World War II there were many organizations in which two or more allies were working together. Naturally a certain amount of friction developed due to the different methods of the allied forces.
>
> General A felt that an allied commander of a subordinate unit was not cooperating properly and, in fact, was working

against the success of the larger unit to further his own unit's advantage. General A prepared a strong letter to his superior explaining the case as it appeared to him and protesting the actions of the subordinate. Before he dispatched the letter he let Col B, his chief of staff, read it. Col B urgently advised that it not be dispatched that evening and that he be permitted to put it in his safe for the night so that they could reconsider it the next morning. Because of the strong recommendation of Col B, and in the more reflective judgment of the next day, the letter was not dispatched. Subsequent events proved that in this one case at least, Col B proved his worth as an advisor to his commander.

## CHIEF OF STAFF ACTS FOR THE COMMANDER

The chief of staff represents the commander during his temporary absence or when authorized to do so. In the temporary absence of the commander, the chief of staff makes such decisions as the occasion demands; in every case he is guided by general instructions and policy and by his intimate knowledge of the commander's wishes. The commander must have full trust and confidence in his chief of staff—trust that the chief of staff will make the needed decisions, and confidence that he will follow established policies.

In order to be prepared for future contingencies the chief of staff makes a continuous study of the situation. At the end of each day he should ask himself—What did I know yesterday about such-and-such a problem? What did we anticipate would happen? What actually did happen today? By such retrospective thinking he can improve his ability to reach sound conclusions and thus be better prepared to provide the commander with sound recommendations.

The chief of staff should be available to subordinates. In order to accumulate facts, he should maintain an open door to his office—a door that is not guarded by assistants, secretaries, and orderlies. The welcome mat should be clearly evident. If he is hard to reach, information will not flow to him readily.

Col C, in his first conference as chief of staff, informed his staff: "My door is always open and you must feel free to enter my office without knocking and without formality. I am particularly anxious that you inform me promptly of

> the bad news you may get. In most cases we can work out a solution before it becomes serious if we face it promptly and vigorously. So bring me the bad news quickly. Certainly I want to know the good news, but we will suffer no damage if it is delayed a little—not so with the bad news."

This attitude is recommended. It encourages the staff section heads to go to the chief and to talk over freely the troubles which loom large to them but which often evaporate into thin air under his questioning. In many cases the individual who brings the bad news develops a solution as he discusses the trouble. In the few cases which can not be solved at once, forewarning usually reduces the effect of the trouble.

Patience is an added virtue, for he must listen to much talk and many wails of grief in order to extract some few bits of important information which he needs. However, even the airing of petty grievances gives him an excellent opportunity to size up the staff section chiefs. Knowledge of the personality of the staff section chiefs becomes invaluable as time goes by.

The chief of staff must keep the commander informed of the enemy situation; the situation relative to adjacent, supported, and supporting units; and the location, strength, morale, training, equipment, supply, evacuation, and general effectiveness of the command. You can see why he must make a continuous study of the situation and why he must have the staff and unit commanders pouring the information into his office. No one man by his own efforts could possibly collect all of the facts needed.

> Col D was a capable chief of staff but he lacked one quality—he was not a good listener. Let us see how this affected his ability to keep the commander informed. A situation was brewing that required a full exploration of all the factors bearing on the case. At the direction of Col D, G-3 assembled his officers and the other staff section heads to consider these factors. At the end of a half day of exploration, the heads of the staff sections decided they had the essential information ready for presentation to the chief of staff. A plan of presentation was decided upon and each officer was ready to present his part of the information. They assembled in the office of the chief of staff and G-3 started the presentation.

> Here was an opportunity for the chief of staff to secure information with which to round out the facts he has so that he could present a complete picture to the commander. Unfortunately, it did not work out as expected. Col D asked a question, then supplied the answer himself. From that point he proceeded to discuss the situation, rarely asking one of the staff for an opinion, and he continued to dominate the conversation completely. At the end of an hour none of the staff section heads had contributed more than an occasional "Yes sir" or "No sir."
>
> What could Col D take to the commander as information? Nothing more than he had previously known, for he had gained nothing from the staff; he had not increased his information in the least. Probably the most serious fault was that he had discouraged the staff from making any future attempt to give him information.

## FUNCTIONS PERFORMED FOR THE COMMANDER

The next group of duties are those in which the chief of staff generally acts for the commander.

*The chief of staff maintains the commander's plans and policies.* Fortunate was the chief of staff whose commander announced to the staff in the early days of the organization of the division:

> In all things you will speak for me. In most things, you will be able to consult me. But in some things, at some time, you won't. Speak for me then anyway. Keep the ball moving in your own way, and right or wrong I'll always back you up.

That commander had a crack staff and a crack division. He had the courage to delegate authority, knowing full well that there would be times when the members of the staff would make the wrong decisions or would make mistakes that would have to be straightened out. It takes courage to delegate authority for it means that subordinates will make mistakes that will bring down on your head the wrath of superiors. However, authority must be delegated if the work is to be done, for it takes many hands, many minds, many pairs of eyes to organize, equip, train, and fight a division.

By the same token, a wise chief of staff delegates authority to his staff section chiefs. Placing responsibility

on the proper shoulders will have the immediate result of broadening those shoulders and producing better work. Sooner or later he will have to answer to the commander for some action of a staff section chief, but he must accept that as one of the responsibilities of his position and continue to delegate authority—otherwise the work simply will not get done.

He may require each staff section to maintain a policy file as a guide for its work. These policy files may be in any one of a number of forms. His own policy file will serve as a supplement to his memory and something which he can check quickly as he studies a proposed directive. It may be a manila folder containing the previous publications which contain matters of policy, or it may be a single policy memorandum, republished at frequent intervals.

*He supplements the commander's decisions.* The decisions made by the commander are normally basic in scope and require many additional minor decisions in the process of working out the plans and directives. Here again we can see the great advantage of close relationship and mutual confidence between the chief of staff and the commander. Through long association the chief of staff has an intimate knowledge of the commander's ideas and plans and can make supplementary decisions which will fit into those plans and which will conform to the policies and ideas of the commander.

As soon as the chief of staff obtains the basic decisions from the commander he must make the first supplementary decision—that of determining the method by which he will carry out the commander's decision. In case it requires the work of several or all of the staff sections he must outline the plan, call the staff together, present the commander's decision, make such supplementary decisions as may be necessary, and hold additional conferences to coordinate the efforts of the staff sections. His instruction to the staff section chiefs must be clear and not subject to misinterpretation. Consider the effect produced by Colonel E:

> Col E was a capable chief of staff in most respects but he did have one fault. His oral instructions were not clear, complete, and exact. Col E would call in the heads of the

sections and give them oral instructions as to what was desired. The sections would then work for hours or maybe days, prepare a plan, and turn it in to Col E. Much to their dismay they would often learn that their solution did not meet in any respect the requirements which Col E had in mind. A chief of staff must realize his shortcomings and make strong efforts to overcome them in order to improve the work of the staff. It is interesting to note that Col E could and did express himself clearly and completely when he issued his instructions in writing. The solution here is obviously a simple one. The staff section heads should have requested the instructions in writing, or they should have made complete notes of his oral instructions and checked back at the end of the conference.

*He transmits orders of the commander.* The chief of staff observes with great care the broad division between command and staff responsibility. Decision rests with the commander. In his dealing with the staff and with the unit commanders the chief of staff should keep the pronoun "I" out of his conversation. He must understand that he is representing the commander and that literally hundreds of people in the division who never come into contact with the division commander form their opinion of the commander by the actions, attitude, and personality of the chief of staff. He must be careful that the orders he transmits are clearly understood to be the orders of the commander—not the orders of an officious staff officer.

The actions of a modest, helpful chief of staff can greatly enhance the regard in which the troops hold the commander, even when they have no contact with him. The conveying of oral instructions by the chief of staff can be couched in such terminology that prompt and willing compliance will result. Often orders and directives are so phrased that compliance is given resentfully, and morale and regard for the commander suffer as a result.

Many years ago Lt Col F, regimental executive, remarked during a meeting of officers, "This morning the regimental commander saw that I had a piece of canvas as a floor to cover the soft sand on which my tent was pitched. He objected to my use of a good tent as a ground cloth, and I had to explain that it was a piece of old canvas

I had gotten from the salvage." Within the next hour several officers of that regiment removed from their tent floors good tents which they had been using to cover the soft sand. It was several weeks before the officers learned that the regimental commander had actually talked very forcefully about the matter.

*He supervises execution of orders.* By personal observation, and with the assistance of the coordinating and special staff sections, the chief of staff sees that the orders and instructions of the commander are executed.

The publication of an order is not the end; in fact, it is only the beginning. The important step is to follow through to see that the order is complied with. No unit can be organized, equipped, trained, and fought from behind a desk. The chief of staff will find it necessary to get out of his office or he will lose touch with both his staff and the troops. Personal contact with the people doing the work, on the ground where the work is being done is necessary.

Col G was a good chief of staff. He had all of the basic qualifications, yet he failed in one particular. He rarely visited his staff sections and did not know how those sections worked internally, except by observing the results of their work. He failed to impress his leadership on the whole staff for he did not come into contact with the staff assistants—the men who might soon be the staff section heads. He rarely visited the troop units. He had to depend on reports coming into his office, and regardless of the accuracy and completeness of such reports, he was actually out of touch with the troops and their problems. Consequently he could not keep his commander properly informed.

Col H did visit the troops frequently. In his case, however, it would have been better had he not done so. He was highly critical, never permitting himself to say anything favorable. Apparently he could find nothing that was done well or, if he did, he kept it carefully hidden in his own mind. He also gave the impression of snooping. At times he was seen standing around a corner from where he could overhear the instruction without being seen. Did the troops welcome a visit from Col H? Definitely not.

Col I spent the first half hour each day on a visit to the staff sections. He talked with the various assistants in each section, inquired as to their progress, boosted their ego by making reference to some good job they had done recently,

and checked with the section chiefs as to their problems. Naturally Col I was well informed on the work of his staff and highly regarded by all of its members. They each felt that they could talk to him about any problem—that he was little more remote than the man at the next desk. When asked why he so frequently visited the staff, his reply was that he wanted the staff to know that he was back of them and that when a decision was needed quickly, he was there to help them with it.

*Assembles and forwards reports.* He assembles routine staff section reports, and after approval by the commander, forwards them to higher headquarters.

During the early days of the organization and training of a division, the chief of staff will devote considerable care to see that such reports are well prepared, accurate, and complete. Likewise, when a unit is first committed to combat this scrutiny of reports will require time and care. However, as the staff gains experience, he will find that his task becomes one of informing his commander of anything unusual in the reports.

## COORDINATION BETWEEN STAFF SECTIONS

The third group of duties are those in which the chief of staff works with the staff sections.

*He formulates staff policies.* The chief of staff guides and coordinates the staff in its day to day work. The chief of a newly-formed staff announces policies so that the staff sections will be able to proceed without constantly referring matters to the chief of staff for decision. Probably the most important policy for the chief of staff to announce is the one which says, in effect: This staff will operate in accordance with FM 101-5.

Col J came into a division to replace a former chief. One of his first acts was to tell the staff to "throw away the field manual and get practical." Probably this was the poorest staff policy that he could have announced for it meant, in effect, that there would be no policy. One of his practical ideas was stated to his staff with the question, "Why make the adjutant general sign your papers? Do it yourself." Of course the idea boomeranged shortly when a special staff

officer sent out an order over his own signature, and a regimental commander came in with fire in his eyes inquiring, "just who is running this division!"

Another policy is the requirement that each staff section chief indicate on papers sent to the chief of staff the concurrence or nonconcurrence of other interested sections.

Another policy is that the chief of staff should not keep either unit commanders or staff officers from seeing the commander.

Another policy is that when it is necessary to say "No" to a request from a unit commander, the division commander must make that decision.

Staff policies may be kept up-to-date by periodic revision and by publication of a brief showing the rescinded policies and the new ones. When the basic staff policy is to conform to FM 101-5, there will be need for few other policies.

*He directs the staff.* Directing a division staff is no small job when it is considered that there are twenty staff sections. In order to deal with a large number of individuals it is necessary to establish routines and policies so that the general staff can assist in directing all staff work. While the staff section chiefs are being trained, the chief of staff will find that he must make many decisions and give many directions. After the staff develops its operating procedure and becomes familiar with the policies, many decisions are made by other staff officers based on the commander's policy.

Personnel matters go first to G-1, training matters to G-3, supply matters to G-4 and intelligence matters to G-2. In this way a chief of staff can direct a group as large as the division staff by assembling all of the staff section chiefs at appropriate times, or by sending each of them the necessary directives and policies.

A staff as large as that of a division, and even those of the regiment and battalion, must have a directing and coordinating head.

*He coordinates the staff.* Coordinate means to put in harmonious or reciprocal relation. The chief of staff must impress upon his staff that every action taken by one of

them will affect other members and that every action contemplated must be considered from this viewpoint. He must see that the staff officers affected have either concurred in an action or that they have been given the opportunity to express their nonconcurrence.

When a task arises the chief of staff assembles the staff, gives them the information, assigns the various tasks, and designates the staff officer who has the principal responsibility. He must avoid the common fault of giving the principal responsibility to one "G" because of personality, rather than to the proper "G" as indicated by his staff assignment. Here again, much is to be gained by following the manual. It is the guide, understood by all.

Coordination is essential in staff work. The chief of staff must see that coordination is effected and he must hammer on the need for coordination until every staff officer is so conscious of it that he always asks himself the question: "Who else is interested in this matter?"

## SUMMARY

We have considered some of the qualifications desirable in a chief of staff. There are some excellent chiefs of staff who do not have all of these qualifications, but the best of them do. The duties required of the division chief of staff require an officer of education, experience, and ability. He must compare favorably with the highly-paid executive in civil occupations. While it is a position of distinction, it is also a position of toil and exacting demands. It is a duty in which service is of paramount importance. In order to perform his duty in a superior manner the division chief of staff or the unit executive officer should have such an inner urge to accomplishment that he will devote himself heart and soul to his task.

# The Salm Chateau Offensive

(A Historical Monograph)

The 75th Infantry Division, a relatively inexperienced unit that had received its combat indoctrination during the early days of the German breakthrough in the Ardennes, underwent its second trial by fire shortly after the main thrust of Field Marshal Von Rundstedt had been blunted by the arms and armor of the Allied force. This monograph covers a small portion of that encounter, setting forth an account of the operations of the 3d Battalion, 289th Infantry, 75th Infantry Division in the Salm offensive (Salm Chateau, Belgium) during the period 15-21 January 1945.

The Battle of the Bulge, which had begun so promisingly for the German Army at dawn on 16 December 1944, had reached a turning point on 24 December, and by 25 December the balance had shifted to the Allies. (Map 1.) During the early days of the breakthrough Allied divisions had been committed piecemeal and in a seemingly haphazard, though successful, attempt to stem the German offensive. Many regiments were detached from their parent division and attached to other units, where needed. Thus, when the battle turned in favor of the Allies, a short period of reorganization and regrouping was necessary. The 75th Division entered combat under these conditions with two of its regiments attached to the 3d Armored Division. These regiments, after a successful operation in the Grand-Menil-Manhay sector, were reassigned to 75th Division control and were withdrawn from action to regroup and to prepare to operate under division control.

## EVENTS LEADING UP TO THE SALM OFFENSIVE

On 8 January 1945 the 75th Division received orders to relieve the 82d Airborne Division and take up positions

generally along the west bank of the Salm River. The 289th Infantry Regiment was assigned the sector extending from Vielsalm on the north to Provedreux on the south. (Map 2.) It was given the mission of relieving elements of the 504th and 508th Parachute Infantry Regiments. A warning order issued by division permitted a reconnaissance to be made of the 82d Airborne Division's positions by the commanding officer and staff of the 289th Regiment. These positions had only recently been recaptured by the 82d Airborne Division in a strong counterattack. The entire position hinged on a key terrain feature—the high wooded ridge Thier Du Mont to the north of the town of Comte and extending to a point north of the town of Salm Chateau.

Based on his reconnaissance and an estimate of the situation, the Commanding Officer, 289th Infantry decided to place all three battalions on line with the 2d Battalion on the left, the 3d Battalion in the center, and the 1st Battalion on the right.

The 3d Battalion, 289th Infantry was assigned the mission of relieving the 3d Battalion, 508th Parachute Infantry, and elements of the other two battalions of this same regiment. At the time of receipt of this order, the 3d Battalion was quartered in the Belgian town of Deigne (Map 1) and moved during the night of 9-10 January to a forward assembly area near the small town of Erria (Map 2). The executive officer, 3d Battalion, received an order from the regiment at 0300, 10 January, to notify the battalion commander that a reconnaissance of the 82d Airborne positions would be made on the following day, and that key personnel, both commissioned and noncommissioned, might assist in the reconnaissance. While the reconnaissance was being made the battalion was to move forward on foot under command of the executive officer. The battalion commander, quick to seize the opportunity to make an extremely thorough reconnaissance, took with him at least one noncommissioned officer per rifle platoon, all machine-gun squad leaders, and one noncommissioned officer per

weapons and mortar platoon. The remainder of the battalion commander's party consisted of the S-2, S-3, S-4, artillery liaison officer, communication officer, and two officers per rifle and heavy weapons company, including the

Map 1.

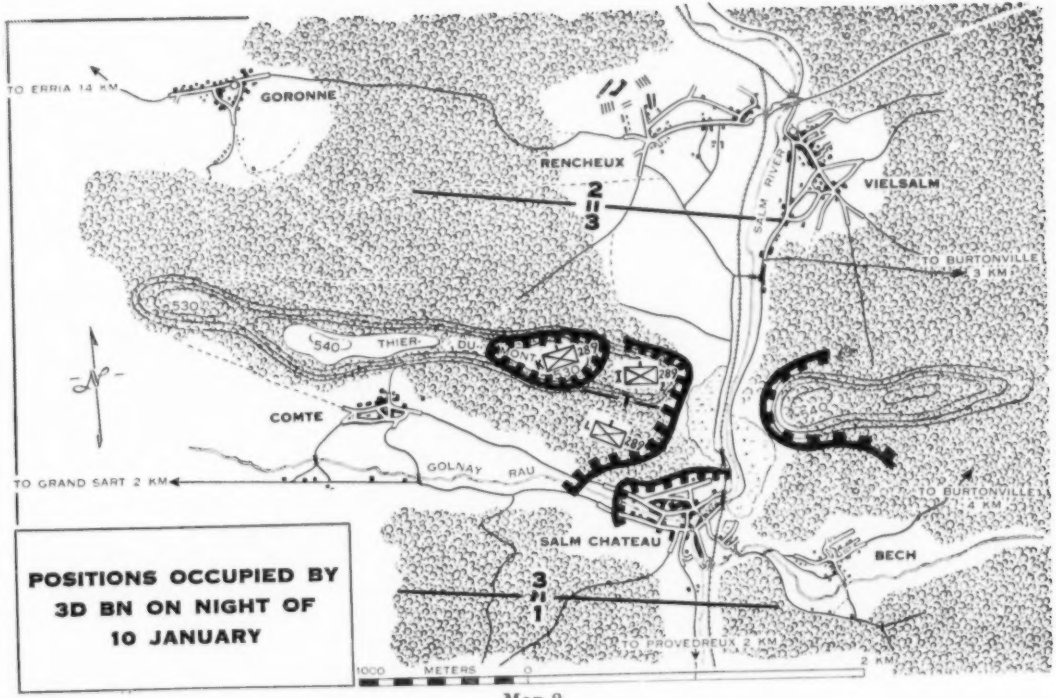
company commanders. This large group infiltrated forward in jeeps and during the day made a minute inspection of the area the battalion was to occupy.

The battalion marched 14 kilometers from Erria to Goronne and by nightfall was ready to move into position. Due to the efficient reconnaissance by the commanding officer and his selected group, the battalion was able to accomplish a very orderly night relief. The unit was met by guides at a predesignated point in Goronne, and each company, platoon, and squad was able to move directly from march column to its position. The only delay in the entire operation was experienced by Company L, whose area was so exposed that the company had to be infiltrated into the position. During the night relief not a single round of enemy ammunition was directed at the position, attesting to the secrecy and efficiency with which the relief was accomplished. The relief of elements of the 82d Airborne Division by the 3d Battalion was completed at 2400, 10 January.

At dawn the battalion found itself rather insecurely entrenched on some very formidable terrain (Map 2). The left flank occupied by Company I was refused, being bent back to a point some 900 meters from the Salm River. This company also had fair observation into the southern outskirts of Vielsalm and maintained contact with the 2d Battalion on its left through the use of frequent patrols. The right portion of the 3d Battalion zone was defended by Company L, which occupied the steep slopes of Thier Du Mont. Company L's right flank extended to a point on the highway leading west out of Salm Chateau and directly across the Salm River from that town. Company K, in reserve, was emplaced atop Thier Du Mont, its position extending east and west along the military crest of that commanding terrain feature. From this position it could move to counter any threat to the battalion's flanks.

## THE SALM OFFENSIVE—INITIAL PHASE

The period 11-15 January was devoted to preparation for the all-out attack. Positions on Thier Du Mont were improved. Patrols were employed to find crossing and bridge sites along the Salm River, to determine enemy strength, and to identify enemy units in contact. Men on


TO ERRIA 14 KM
GORONNE
RENCHEUX
SALM RIVER
VIELSALM
TO BURTONVILLE 3 KM
2
II
3
530
540
THIER DU
COMTE
GOLAAY
RAU
TO GRAND SART 2 KM
TO BURTONVILLE 4 KM
SALM CHATEAU
BECH
3
II
1
TO PROVEDREUX 2 KM
2 KM
1000 METERS 0
POSITIONS OCCUPIED BY 3D BN ON NIGHT OF 10 JANUARY

Map 2.

foot forded the icy river, or shivered in deep snow drifts, ever watchful of the enemy's movements.

On 13 January, a mechanized patrol from the 75th Division Reconnaissance Troop was ambushed by Company L. Somewhere along the channel of communication someone had failed to give notification of this patrol's operation within the battalion zone. The patrol had crossed the Salm River at a point north of the city of Vielsalm and was probing to the south on the enemy side of the river. Company I noted the mechanized activity across the river but could not bring fire to bear on the vehicles. The company commander notified Company L of the approach of these vehicles, and Company L took them under automatic weapons and small arms fire. The patrol sustained several serious casualties that were evacuated by Companies I and L under enemy fire during the hours of darkness, after their true identity was learned. A tragic occurrence, but it serves as a stirring example of the value of passing on friendly as well as enemy information to all concerned.

## THE DIVISION PLAN OF ATTACK

While patrol activity was maintained at its peak, the division, regimental, and battalion commanders were preparing for the attack across the Salm River.

The 75th Division, in conjunction with other units of XVIII Airborne Corps, was to make a concerted drive against the northern shoulder of the Ardennes salient to effect a junction with units of the Third Army which were pressing the enemy from the southern shoulder. (Map 1.)

Since the large city of Vielsalm was the key to the entire enemy defensive setup, and since the concentration of enemy troops was predominately in the Vielsalm-Salm Chateau sector, the plan was to make a double envelopment of that area. The 291st Infantry, 75th Infantry Division, was to attack from an area north of Vielsalm; the 289th Infantry was to attack from the south through Salm Chateau. The two prongs of the pincers were to meet at a point near the town of Burtonville and then continue the attack to the southeast toward a juncture with the Third Army.

## THE REGIMENTAL PLAN OF ATTACK

The 289th Infantry plan of attack called for the initial employment of all three battalions. The detailed plan coordinated an attack in column by the 1st and 2d Battalions from a point near the town of Provedreux, with a thrust across the Salm River against the stronghold of Salm Chateau by the 3d Battalion. The attack was to continue upon order from regiment. This plan in all its details was approved by division, and the units concerned made preparations. Regiment received word at 2030, 14 January, that the attack would commence at 0300, 15 January, with the 2d Battalion making the initial crossing south of Salm Chateau, thus by-passing that town and capturing Bech (Map 2), about one kilometer to the east. The 1st Battalion was to follow at 0630 in column behind the 2d Battalion, and then turn south and capture the high ground southeast of Bech. The 3d Battalion was to attack at 0900, force a crossing of the Salm River, and capture the town of Salm Chateau. The different hours of attack assigned to the three battalions of the regiment appear to indicate a piecemeal effort; however, the town of Salm Chateau is situated in the center of a series of ridges that encircle the town on three sides, and it was intended that these ridges be cleared prior to entry of the 3d Battalion into Salm Chateau.

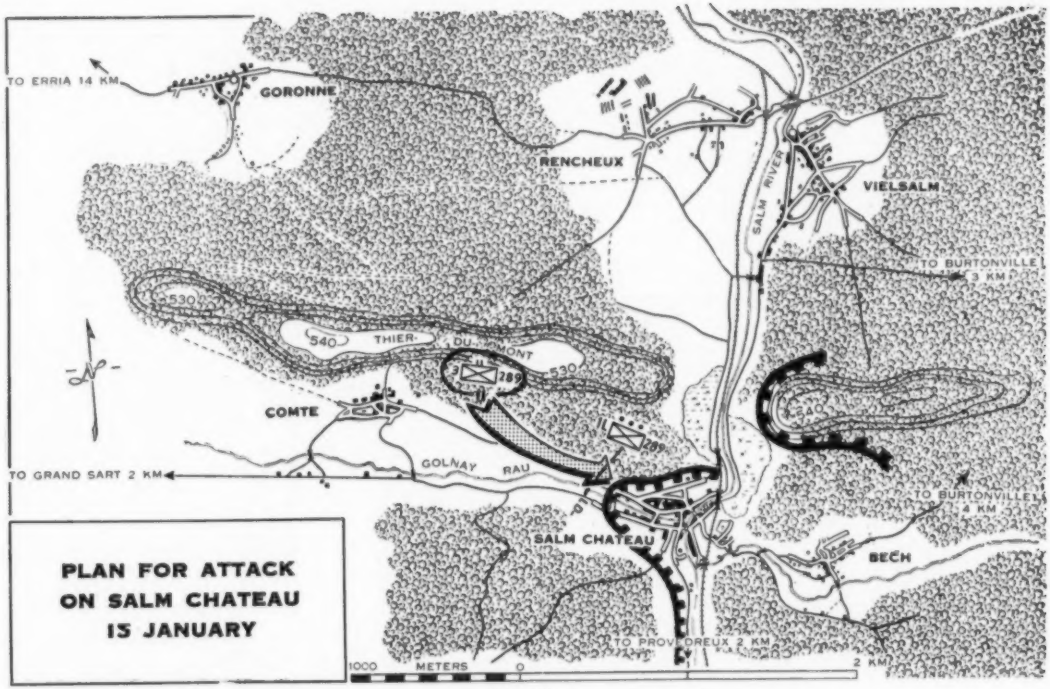
## THE BATTALION PLAN OF ATTACK

A warning order was issued to all company commanders by the 3d Battalion executive officer and all were briefed by the battalion commander prior to issuance of the battalion attack order. Intelligence received by the battalion S-2 from higher headquarters and battalion patrols indicated that the enemy in the battalion zone consisted of elements of three regiments of the 326th Infantry Division and remnants of the 62d Infantry Division. Earlier intelligence reports indicated the presence of portions of the 9th S S Panzer Division.

Key personnel and staff members of the 3d Battalion were assembled to receive the battalion attack order. Little further reconnaissance or planning was required since the spade work, including all plans for the employment of the battalion, had been painstakingly done during the battalion's stay on Thier Du Mont. Now remained only the necessity for the formal issuance of the battalion order, and last minute preparations and supervision.

In the forcing of the Salm River and attack of Salm Chateau, the battalion was to move under cover of darkness, beginning at 0300, 15 January, to an assembly area about one kilometer northeast of Comte (Map 3). This area was a heavily wooded draw that afforded both concealment and cover from flat-trajectory weapons. Company L was to remain in position covering the withdrawal of Company I from the left flank of the battalion sector. After this movement was completed Company L was to move to the assembly area, leaving its right flank platoon in position where it covered the road leading from Salm Chateau to Comte as well as the main highway to the west (Map 3). One machine-gun platoon was to be attached to Company I and one machine-gun platoon to Company K. The 81-mm mortar platoon was held in general support with the mission of supporting the attack from its existing positions.

The attack was to be made in a column of companies in the order I, K, and L. The antitank platoon, the ammunition and pioneer platoon, and one platoon of Company A, 275th Combat Engineers (attached) were to remain initially in the vicinity of Comte. The line of departure was designated as the line held by the right platoon of Company L. This platoon was to join its company after Companies I and K passed through. The mission of the leading company was to overcome any enemy resistance that might be encountered in the houses on the west bank of the Salm River, force a crossing into the main portion of the town, and reduce the northeast section. Company K was to follow in column and attack the southwest section of town. Company L would reorganize when joined by the battalion covering force and would receive further orders on the west


TO ERRIA 14 KM
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VIELSALM
TO BURTONVILLE 3 KM
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DU-MONT
530
289
COMTE
289
TO GRAND SART 2 KM
GOLNAY
RAU
TO BURTONVILLE 4 KM
SALM CHATEAU
BECH
TO PROVEDREUX 2 KM
1000 METERS 0 2 KM
PLAN FOR ATTACK
ON SALM CHATEAU
15 JANUARY

Map 3.

bank of the Salm. The boundary between Companies I and K for the attack within Salm Chateau was designated as the main road extending from northwest to southeast, further identified as being the street upon which the church was located. Upon completion of these missions, all companies were to reorganize and prepare to continue the attack on order.

The issuance of the battalion order was completed by 2200, 14 January. The battalion commander and S-3 moved to the company locations to supervise the movement to the assembly area, while the executive officer displaced the command post from Goronne to Comte, a town on the main axis of the attack. The new command post opened at 0100 and the battalion S-4 arrived at the new location at 0200 with a hot meal for the men.

## THE ATTACK

"Now we prepare to attack, attack, and attack until a final decision is reached on the Western Front.*** Tomorrow morning begins the final challenge***. Behind us stand 90,000 of the best manhood in the world. The outcome is certain. I should like to impress upon the mind of every individual the stake for which he fights * * * the future of the United States of America." With this statement by the Commanding General of XVIII Airborne Corps running through the minds of the men of the 3d Battalion, the attack jumped off from the line of departure at 0900.

Immediately upon crossing the line of departure, Company I began to receive sporadic but extremely accurate fire from snipers concealed in the houses on the west bank of the Salm River (Map 3). The company deployed still further and slowly inched its way forward. A heavy snow fall had obliterated all roads and trails and played heavily in the enemy's favor. There were no snow camouflage suits in the battalion and the dark uniforms of the men made them excellent targets for the German sharpshooters. The sniper fire became increasingly accurate as the advancing infantry offered more and better targets. In the face of such marksmanship the attack of Company I ground to a

halt shortly after it started. The battalion commander with his S-3 were in position with the attacking troops and were pinned down by this fire, but by means of radio, ordered Company K to swing to the right across the main highway and clear out the riflemen who were holding up the attack. Company K attempted to carry out this order, but they too were halted by accurate rifle fire.

After being pinned down in the snow for two hours, the battalion commander requested tank support from regiment. A platoon of tanks dispatched from Grand Sart arrived at Comte at 1300, having been delayed by a mined stretch of roadway.

Meanwhile, through massing all fires against the houses held by enemy forces, the battalion was able to make some advance toward the outskirts of Salm Chateau. To the rear the tanks could be seen slowly approaching, with a squad of engineers sweeping the road ahead of them but finding no mines. In an effort to speed up the movement of the tank platoon the battalion commander sent the operations sergeant to guide the tanks forward. The sergeant nonchalantly trotted back to the tanks and climbed into the turret of the lead tank with the remark, "Hell! there ain't a mine from here to the damn river!" and led the tanks forward.

The tanks opened fire at almost point blank range, and in conjunction with the massed fires of the battalion, succeeded in quieting all sniper and automatic weapons fire from the houses on the west bank of the river. Company I moved forward and cleared these houses with a minimum of fighting. Only one platoon of Germans was captured in the engagement. Only a few enemy, well positioned and well armed, had held up the progress of the entire battalion for five hours.

Company I completed its reorganization in the shelter of the recently acquired houses and prepared to continue the attack across the Salm River. Company K, from its positions on the west bank of the Salm, prepared to cover this crossing by fire directed against the houses fronting the east bank of the river. The bridge over the Salm at the

selected crossing point had been blown by the retreating enemy and information sent back by the leading elements of Company I indicated that the river could not be forded because it was too deep and swift.

The engineer platoon leader was ordered forward from Comte to confer with the battalion commander. As a result of this discussion, it was decided to construct a footbridge and to force a crossing in the face of the enemy resistance. This decision was influenced by the fact that the configuration of the buildings at the point of crossing permitted only light enemy fire to be directed against the bridge site. Enemy fire could come only from buildings in the immediate vicinity of the crossing site, and could be neutralized by fire from the battalion.

The engineers, assisted by members of the 3d Battalion Ammunition and Pioneer Platoon, moved the bridging equipment forward by hand and proceeded to construct the footbridge under ineffective hostile fire from automatic weapons, small arms, and mortars.

The footbridge was completed late in the afternoon, and after three futile attempts, was placed across the river. Several casualties were received in the process. The engineer platoon took up positions in the houses bordering the river to assist by fire the crossing of Company I. The leading elements of Company I successfully crossed the footbridge under very light sniper fire.

The enemy reacted to the bridgehead by delivering barrages of mortar fire. This fire, emanating from positions on the ridges that surrounded the town, was delivered with unbelievable accuracy and deadly timeliness on each street, as each street was taken. Failure of the other two battalions to clear the surrounding ridges cost the 3d Battalion heavy casualties.

Once across the river, the battalion cracked the backbone of the enemy defensive setup; however, a stubborn house to house fight developed that increased in intensity as the enemy was compressed into fewer and fewer houses. Company I fanned out immediately upon crossing and cleared the houses that could place direct fire on the footbridge,

then began the systematic reduction of their section of the town. Company K, close behind Company I, crossed and began the attack to the southeast. Company L remained on the west bank.

The town of Salm Chateau was much more built up than had been estimated. The business section was several blocks in length and consisted of well-constructed stone buildings, all presenting a solid front to the thoroughfares. Fortunately no great effort had been expended by the enemy in transforming these buildings into a coordinated defensive position, and the attacking troops were able to advance slowly even though they were harassed by mortar fires.

The enemy snipers were deadly accurate. Company I suffered 18 casualties in almost as many minutes from sharp-eyed and well hidden Germans. The psychological effect of fighting a completely hidden enemy had a drastic effect on the men, almost causing the attack to bog down. Time and again the men had to be routed from behind walls, buildings, trees, or any makeshift shelter they could find that offered protection from the snipers bullets. Only the superb leadership of the platoon and squad leaders carried the units forward. In spite of such opposition, the attacking troops continued to move forward until they had cleared the last house on the outskirts of the town.

By 1930 all enemy opposition, save for an occasional by-passed sniper, had ceased. The battalion began a systematic roundup of prisoners. Many of them had surrendered during the encounter; others, who were by-passed, stepped from the buildings into the streets with their hands on their heads in the well-known gesture of submission. The largest number of prisoners had to be routed from the cellars where they had taken shelter when the attack reached its greatest intensity. No record was kept of the exact number of prisoners taken; however, 75th Division accounts indicate that the lineups at the various interrogation centers were so large that sufficient space for the proper safeguarding of prisoners was lacking.

Large amounts of ammunition and ordnance were abandoned by the retreating enemy, as well as stock piles of gas-

oline and oil. The battalion communication officer had a field day gathering numerous German telephones and reel after reel of multicolored combat wire.

The battalion, in the meantime, organized a hasty defensive position along the eastern outskirts of the town to prepare for the customary German counterattack. Company L, which had remained in reserve during the fight for Salm Chateau, was employed to mop up the houses on the west bank of the Salm, gathering in a large number of by-passed Germans. At 2100 Company L was ordered to move across the Salm River and occupy a portion of the battalion defensive position. Regiment, having received notification of the battalion's success, ordered it to remain in place throughout the night, reorganize, and prepare to continue the attack the next day.

Early on the morning of 16 January the battalion commander was ordered to dispatch one company to the town of Bech, about one kilometer to the east of Salm Chateau, to garrison the town and to act as a reserve on the left flank of the 2d Battalion. This battalion had been successful in its initial attack on the town of Bech, and was now preparing to continue the attack to the northeast toward Burtonville.

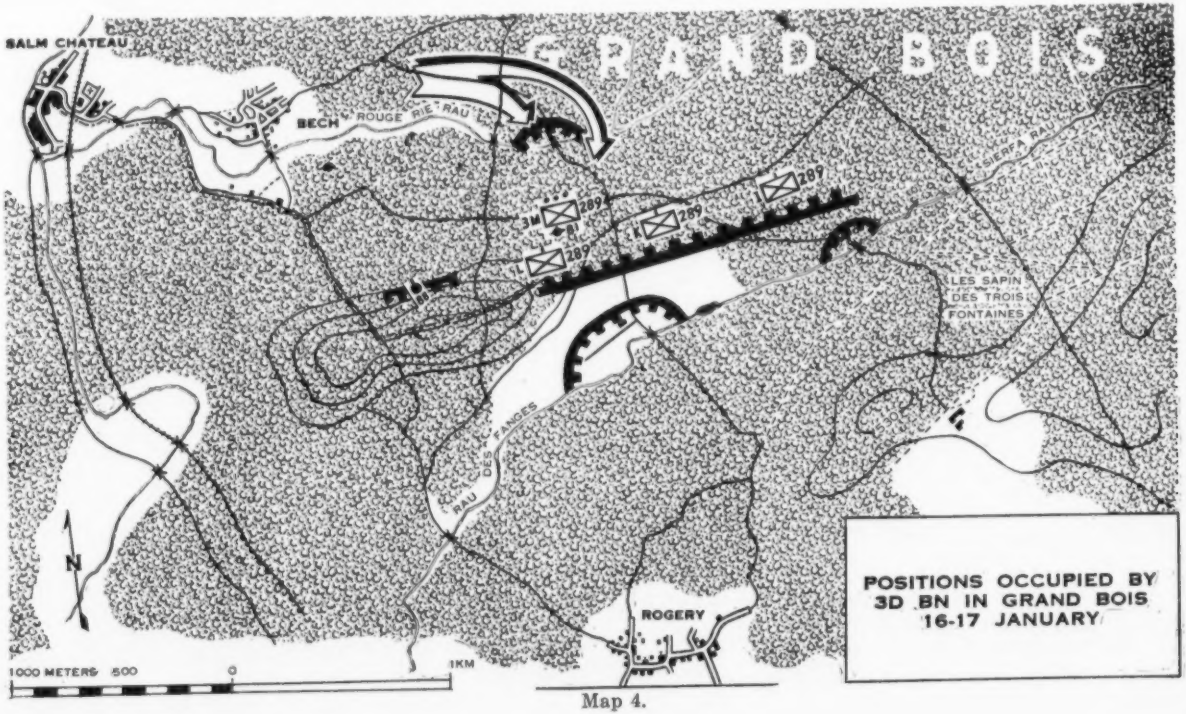
Company K was sent to occupy Bech and was directed to close in position by 0600. Company L was moved from its position in the center of Salm Chateau to occupy Company K's former defensive position on the southeastern outskirts of Salm Chateau. Simultaneously the battalion command post, headquarters company, and attached engineer platoon began displacement to a new location in the town of Bech. The platoon of tanks moved into firing positions at dawn to strengthen the defenses of Salm Chateau.

The movement to Bech had been accomplished by Company K under cover of early morning light. They had just closed into the town when a heavy barrage of artillery made the Bech-Salm Chateau road untenable. The heavy barrage lasted for approximately 15 minutes, then lifted to the high ground about two kilometers southeast of Bech, where it wrought havoc among the leading rifle companies

of the 1st Battalion which had crossed the Salm River in accordance with the regimental plan of maneuver and was attacking to the southeast.

The 3d Battalion was alarmingly spread out at this time with Company K in Bech, Companies I and L in Salm Chateau, and headquarters company and the command post enroute to Bech. Mindful of the necessity for maintaining a unified command, the battalion commander requested and obtained permission to consolidate his battalion in the vicinity of Bech. Consequently, at 0900 he ordered Companies I and L to move out along the Bech-Salm Chateau road and assist Company K in the occupation of Bech. The tank platoon was released from battalion control and remained in Salm Chateau. By this time the battalion executive officer had joined the battalion in Salm Chateau, bringing with him the remainder of the unit. He was instructed to lead the foot elements forward to Bech while the battalion commander and the S-3 reconnoitered for suitable defensive positions in Bech. All vehicles were to remain in Salm Chateau initially and were to move to Bech by infiltration after the battalion had closed in.

The battalion moved forward in a column of twos deployed on both sides of the road, the order of march being Companies I, L, M (—), and headquarters (—). The leading elements of the column had moved approximately 50 meters from the outskirts of Salm Chateau when they were taken under well-observed mortar fire, and also under direct fire by a German 88-mm artillery piece. (Map 4.) Any attempt to move forward in the face of such accurate fire would have resulted in a needless loss of lives, as no cover or concealment was available along this stretch of road. The battalion withdrew to the shelter of the stone buildings in Salm Chateau and the enemy 88-mm gun and mortars were taken under fire by the mortar platoon of Company M. This action met with little success, however, as the exact location of the 88-mm gun was not known. Priority of artillery fires had been allocated to the 2d Battalion and no other counterbattery fire was available.


SALM CHATEAU
GRAND BOIS
BECH
ROUGE RIE RAU
SIERA RAU
3M
289
289
289
289
LES SAPINS DES TROIS FONTAINES
RAU DES FANGES
N
ROGERY
1000 METERS 500 0 1KM
POSITIONS OCCUPIED BY 3D BN IN GRAND BOIS 16-17 JANUARY

Map 4.

When the battalion commander was notified of the situation at Salm Chateau, he rejoined the battalion, running through the enemy fires to do so. By 1300 no apparent headway had been made toward eliminating the enemy weapons, so the battalion commander decided to wait until dark to move the remainder of the battalion to Bech.

A sudden change in the regimental plan of attack eliminated the necessity for moving the entire battalion to Bech. Instead, the battalion was ordered to displace to the high ground about two kilometers north of Rogery, and to extend the line of the 1st Battalion to the northeast. Two routes of approach to this position were to be used (Map 4). Company K was to move northeast to the road junction along the route previously taken by the 2d Battalion, then turn to the southeast, sweeping the woods (Grand Bois) as it advanced and occupying the assigned area north of Rogery.

Company L was to by-pass Bech by moving southeast along the road to the south of Bech, continuing along that road to the road junction (Map 4), then moving due east to contact the left flank of the 1st Battalion. The mortar platoon of Company M was to move with Company L to the new location. A rear CP was to be maintained by headquarters company in Salm Chateau. In order to maintain closer liaison, the battalion executive officer moved to Bech. Company I was to move to Bech, occupy the positions held previously by Company K, and remain in regimental reserve.

No enemy information was available at this time. The movement to the new positions was initiated at approximately 1800 on 16 January, each company moving out as a separate task force. Centralized control by the battalion commander was impossible because the distance between units and the extreme ruggedness of the terrain made the SCR-300 radio inoperative.

Company L moved to its new positions without becoming engaged in a fire fight. The company commander experienced great difficulty in maintaining proper direction due to the heavy snow that covered the roads, the trails, and most of the prominent land marks. This company moved into positions along the edge of the woods as shown

on Map 4. The company dug in for the remainder of the night, and attempted to contact the 1st Battalion by patrols. Contact was made with Company B at 1000 the following day. Company L remained in position awaiting the arrival of Company K. An interesting side-light was brought out by a German prisoner captured later that same day: if company L had moved or patrolled forward 300 meters it would have captured a German division commander.

Company K was initially unopposed in its swing to the northeast, and it continued to advance until it reached the bridge over the stream Rouge Rie Rau where a night fire fight developed (Map 4). The enemy was evidently a covering force left behind by the units withdrawing from Bech. Considerable small-arms and automatic-weapons fire halted the advance of Company K; however, a platoon out-flanked the enemy force from the east. After a delay of approximately one hour Company K was able to continue its advance to the southeast. By dawn the company had successfully contacted Company L and had moved into position on its left, further extending the line to the northeast (Map 4).

While Companies K and L were moving into line, Company I moved into its reserve position at Bech. At approximately 2200 on 16 January, the 2d Battalion, which was making a sweep to the northeast under cover of darkness, was counterattacked by infantry supported by tanks. Company G was disorganized and driven back toward Bech. A platoon of Company I was rushed to the road junction 1,300 meters east of Bech to set up a road block. Later the remainder of Company I was committed to bolster the defenses of the 2d Battalion. Company G regained its original position by counterattack. Company I, at this point, assembled at the road block and defended it.

The road block was maintained by Company I until they were relieved by Company E during the afternoon of 17 January. Company I was then released from regimental control and ordered to join the 3d Battalion in its location north of Rogery. They moved into position at 1800 that

same day, extending the battalion line to the northeast on the left of Company K. All three rifle companies of the 3d Battalion were now to the east of the 1st Battalion (Map 4).

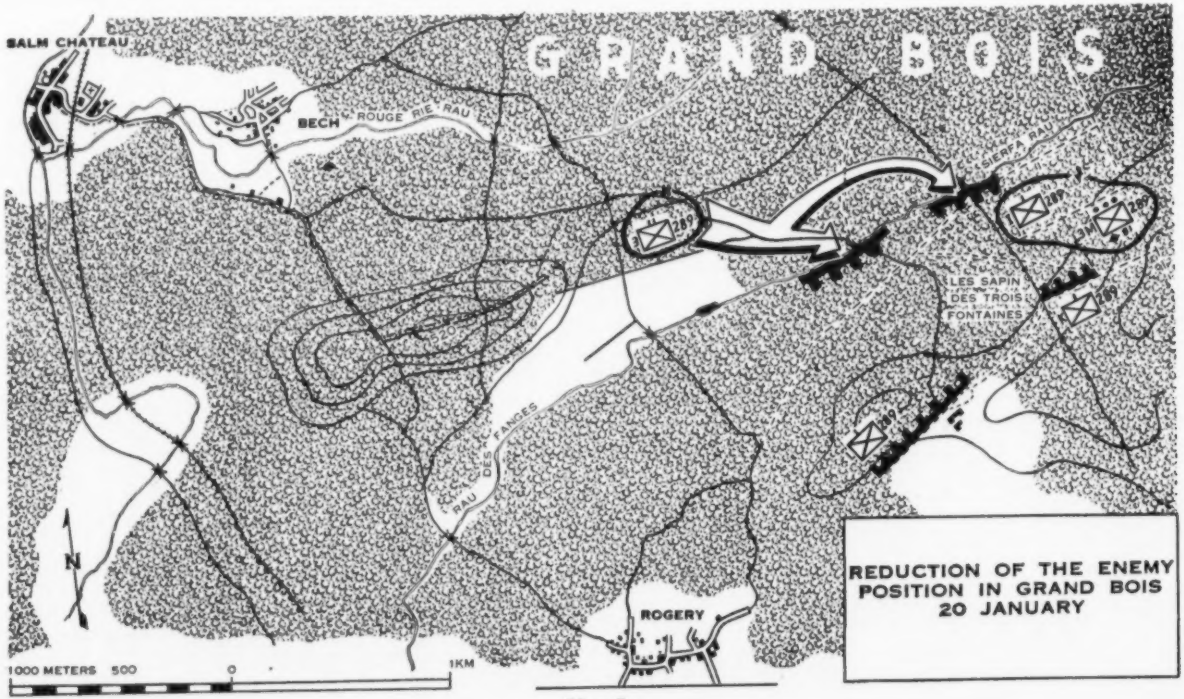
## THE SALM OFFENSIVE—FINAL PHASE

No changes were made in the battalion's position during the following two days; however, on 19 January the battalion was alerted to continue the attack on the following day in conjunction with the 1st and 2d Battalions. Since deep snow had made the heavily wooded Grand Bois in this area impassable to vehicles and almost impassable to foot soldiers, the fight evolved into a struggle for control of the trails, roads, and fire-breaks that honey-combed this section of the front. Consequently, all battalion transportation was ordered to remain in Salm Chateau until a road could be cleared.

The 3d Battalion was ordered to seize the high ground in Le Sapin Des Trois Fontaines approximately two kilometers northeast of Rogery (Map 5). The battalion commander decided to attack south and southeast along the roads, rather than to attack through the woods. The order for the attack was issued during the night of 19-20 January. The formation for the attack was a column of companies in the order I, L, and K. One platoon of heavy machine guns was attached to Company I, the other to Company L. Mortar support was impossible due to lack of observation, so the mortar platoon moved with the battalion headquarters in the interval between Company L and Company K. The ammunition and pioneer platoon was assigned the mission of maintaining the supply line.

The battalion moved to an assembly area as shown on Map 5 at 1000 on 20 January and prepared to attack to the southeast.

The attack jumped of at 1245 and the battalion advanced along the road one kilometer. When the leading elements of Company I reached the bridge across Sierfa Rau they were met by a hail of machine gun and mortar fire that pinned them and the remainder of Company I to the ground (Map 5). A spirited fight ensued but the battalion was unable to advance. The platoon leader of the 1st


SALM CHATEAU
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ROUGE RIEU RAU
SIERFA RAU
LES SAPIN DES TROIS FONTAINES
RAU DES FANGES
ROGERY
N
1000 METERS 500 0 1KM
REDUCTION OF THE ENEMY POSITION IN GRAND BOIS 20 JANUARY

Map 5.

Platoon of Company I was killed while attempting to lead his platoon across the bridge. With him fell his command group of three men. The attack settled down to a rapid exchange of small-arms fire.

Evacuation of casualties during this stage of the attack required a litter haul of two kilometers. Beyond this point jeeps were able to carry the wounded the remaining distance to the battalion aid station in Bech. The aid men and litter bearers were assisted by riflemen.

Communication was a particularly difficult problem. Radios were used in the battalion net, but they were ineffective for maintaining contact between battalion and regiment. Wire communication was maintained with rear units only through exceptional efforts on the part of wire crews. These men recognized no zone of responsibility for maintainance, but worked both to the front and to the rear. The number of assigned communication personnel was far short of the number required to effectively maintain and operate the channels of communication.

When it became apparent that a sizable enemy force was guarding the bridge, the battalion commander committed Company K on a wide envelopment of the enemy's east flank. This company was successful in crossing the stream approximately 500 meters to the northeast of the bridge against only sporadic small-arms fire. They prepared to attack the right flank of the enemy, but this maneuver was not necessary for the enemy, upon perceiving that Company K had forced a crossing, broke off contact and retreated to the southeast. Company K was halted in place by the battalion commander and ordered to attack southeast along the trail upon which it was located (Map 5). Company I was ordered to join Company K at the road intersection 800 meters southeast of the bridge previously captured by Company K. The attack was then to continue to the objective, a distance of some 400 meters, with Companies K and I attacking in column. Company L was ordered to turn sharply to the south and to continue the attack along the trail a distance of about 600 meters. All companies advanced slowly against persistent sniper fire.

By 1700 they had seized their objectives and had begun to prepare a defensive position.

Contact was made with the 1st Battalion on the right and the 2d Battalion on the left during the night of 20-21 January. All battalions of the 289th Infantry Regiment had been successful in securing their objectives.

The 2d Battalion, which had been spearheading the southern prong of the 75th Division's twin offensive, joined forces south of Burtonville with another battalion of the 75th Division, thus completing a double envelopment of the enemy position.

The 3d Battalion had played a minor but important role in this brilliant example of tactics. It had spent its strength to a considerable extent in making a river crossing, in attacking a large town, and in fighting a determined opponent in difficult terrain. The men were cold, hungry, and extremely weary from battling the elements and the enemy.

## ANALYSIS

A study of the operations of the 3d Battalion, 289th Infantry during the Salm Offensive presents the picture of a series of successful minor actions that had a very distinct and important bearing on the reduction of the Ardennes salient. The accomplishment of the battalion missions made possible the 75th Division's double envelopment.

The plan of attack of the 289th Infantry on 15 January 1945 was well planned and executed; however, the 1st and 2d Battalions should have been given the mission of clearing the ridges to the north, east, and south of Salm Chateau prior to the attack of that town by the 3d Battalion. The occupation of these ridges by enemy forces—particularly in the area south of Bech—permitted direct fire self-propelled weapons and well-observed mortar fire to blanket the town. This same fire prevented the movement of the battalion from Salm Chateau to Bech and split the battalion at a critical time.

The attack on the east bank of the Salm River was efficiently executed; a simple plan of attack succeeded where a

more complicated maneuver might have failed. Companies I and K each reduced half of the town on the east bank, and Company L remained initially on the west bank and later completed mopping up. Had it been necessary to commit a reserve, Company L could have moved easily in any direction to place flanking fire on the designated sector to assist either Company I or K.

The forcing of a crossing in the center of town in the face of enemy resistance demonstrated excellent evaluation of the terrain by the battalion commander and engineer platoon leader. The crossing point selected was at a bend in the river where large stone buildings on both sides of the river were constructed at the water's edge. These buildings effectively blocked the massing of direct fire weapons at the point of crossing, restricting the enemy use of firing positions to windows of buildings that fronted the immediate vicinity. These buildings could easily be neutralized by friendly fires during the crossing and they were vulnerable to attack by the leading elements once they had crossed.

In the early stages of the attack of Salm Chateau, the tardiness of the tank platoon proved costly. Only the aggressive actions of the battalion operations sergeant in leading the tanks forward prevented more serious complications. Once the tanks were in position their assistance in routing the snipers was invaluable.

The leadership displayed by the squad and platoon leaders in the face of deadly sniper fire merits commendation. In battle the balance between success or failure hinges on the ability of small unit commanders to press the attack relentlessly. This attribute was aptly demonstrated by both the noncommissioned officers and the junior officers of the 3d Battalion.

The battalion plan of attack was highly flexible. In the short space of 16 hours the battalion provided one company as flank protection for the regiment, provided one company as a regimental reserve, bolstered the defense of another battalion, and moved its three rifle companies by separate routes to a new location. During the attack it was necessary

to change direction several times, side slipping to the east and south in order to protect the exposed flank of the 2d Battalion. All of these changes to the original plan were made by brief fragmentary orders.

To say that the lines of communication and channels of evacuation were overextended during the movement in the Grand Bois would be an understatement; yet the wire crews and litter parties, amply reinforced by riflemen, performed the almost impossible tasks of wire maintenance and evacuation. At no time was the unit out of wire communication with the regiment nor were the wounded forced to lie unattended in freezing temperatures.

## LESSONS

Numerous lessons were learned during the Salm Offensive. Several of the most important are:

1. Maneuver can frequently win an engagement when a frontal attack fails.

2. A few well-armed and well-placed snipers can delay the advance of a unit many times their own strength. This is exemplified in the initial assault on Salm Chateau, when the battalion was delayed for five hours by aggressive snipers.

3. Sniper fire has an adverse psychological effect on the individual soldier. Mopping up of snipers should be a concurrent action in any attack, and can be efficiently accomplished by the reserve unit.

4. In town combat, fire superiority can be achieved by massing direct fires on a selected portion of the town.

5. Flexibility of plans is essential to the success of an attack.

6. The keynotes of a successful night relief on a combat position are secrecy and an accurate reconnaissance. These factors were aptly demonstrated by the relief of elements of the 82d Airborne Division by the 3d Battalion.

7. Information of friendly patrols must be disseminated to all units concerned. Friendly fires upon the 75th Reconnaissance Troop's patrol verifies this statement.

8. Proper camouflage in snow is a prerequisite for successful winter combat.

9. Control of the roads and trails in a densely wooded area is tantamount to control of the area.

10. In winter combat the assigned litter bearer teams must be augmented by other personnel so that the wounded receive prompt and efficient evacuation.

11. Assigned communication personnel must be supplemented during peak activity.

12. Tanks give valuable assistance in routing well-placed snipers.

## The Division Replacement Company

During the period of 1943 to 1945, more than one million men joined their units via the replacement stream. Of this number approximately 73 percent were infantrymen, most of whom were assigned to rifle and heavy weapons companies. Replacements were most urgently needed where the greatest number of casualties occurred—in the rifle squads.

The system through which this large number of men were channeled to combat proved satisfactory in many respects; however, there were some flaws in the replacement chain. One of the weak links existed at the division and regimental level. There was no specific organization for administering replacements from the time they left a corps replacement battalion until they were assigned to a company. To correct this deficiency, a replacement company has been made organic to each infantry division. The function of this unit is to receive, process, administer, train, and orient replacements before they are sent into combat.

Addition of an organic replacement company to the division is a direct outgrowth of the Infantry Conference held at the Infantry School in June 1946. A board composed of senior combat-experienced commanders and staff officers found that many casuals were committed to combat without proper orientation, adjustment, and indoctrination. The men knew practically nothing about the enemy unit they were fighting nor about the combat record of their own division. Many replacements became casualties before they knew the name of their platoon leader or company commander. One member of the board offered the following story as a case in point:

> Four truck loads of replacements were convoyed to the command post of a forward battalion before any one noted that the men were all carrying barracks bags in addition to

heavily loaded packs. The men hadn't been told to which company they were assigned and the battalion adjutant had to make assignments on the spot. It took several days for the battalion and regimental adjutants to straighten out the assignment status of the replacements with the G-1. When the matter was finally clarified it was determined that the replacements had actually been assigned to another regiment. In the meantime two of them had been killed and four others wounded.

The studies of the board revealed that many combat divisions recognized the deficiency of the system early in the war and actually organized replacement units for processing and training casuals. The primary difficulty with these

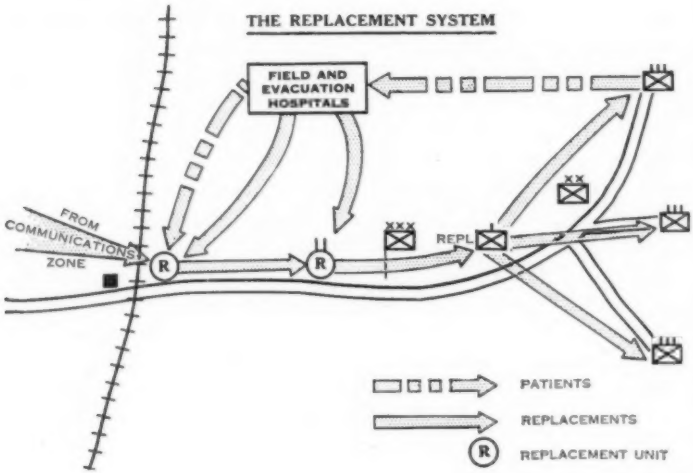



FIGURE 1.—Flow of replacements from army depots to front-line units.

makeshift units, however, was that the necessary training cadre had to be detailed from the already-understrength regiments. As a result, regimental commanders were reluctant to furnish a training cadre composed of veteran officers and noncommissioned officers.

Addition of a division replacement company to the replacement channel provides an organization that will make replacements available to infantry regiments when and where they are most needed. Except for the addition of this unit, replacement channels will be about the same as

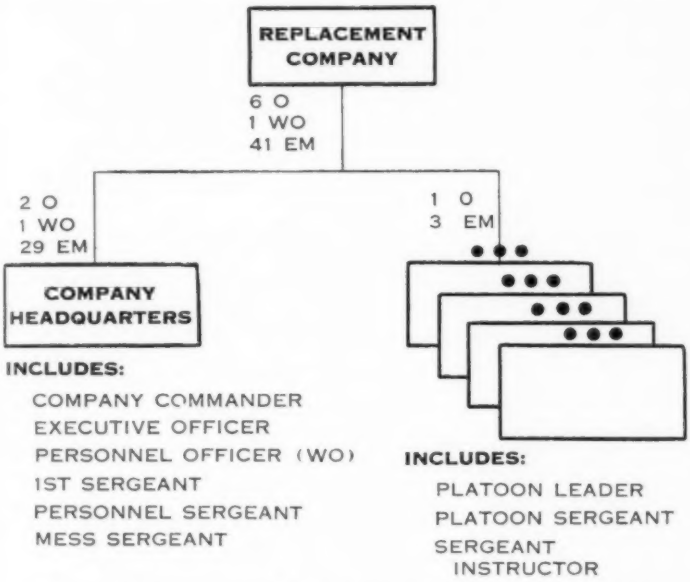



FIGURE 2.—Organization of the Division Replacement Company.

used during World War II. A replacement battalion will furnish casuals for a corps, and a replacement depot will supply casuals for an army. (See figure 1.)

## ORGANIZATION OF THE REPLACEMENT COMPANY

The division replacement company consists of a company headquarters and four platoons. In addition to the personnel normally assigned to any company headquarters, the replacement company headquarters includes a personnel section of one warrant officer and eight enlisted men. Each platoon has a platoon leader, a platoon sergeant, and a sergeant instructor. Because the infantry regiments have the

bulk of the casualties, three of the four platoons serve the infantry regiments, one platoon for each regiment. The fourth platoon supplies replacements for the other divisional units. The company can process two hundred replacements at a time. (See figure 2.)

It is contemplated that the cadre for this company will be composed of combat experienced officers and noncommissioned officers. Each regiment will furnish a cadre for its platoon while the other division units will cadre the fourth platoon. By using regimental cadres for the platoons and rotating personnel, commanders can provide a short rest period for deserving combat personnel who might otherwise require evacuation.

## OPERATION OF A REPLACEMENT COMPANY

The division replacement company receives replacements from three sources:

1. New replacements assigned to the division by the army replacement depot or one of its battalions.

2. Personnel returned to duty from hospitals through replacement installations.

3. Personnel returned directly to the division from hospitals in the combat zone.

It is not contemplated that the replacement company will function as a reservoir which will be maintained at a standard strength; rather, the company will be filled only on the basis of requisitions submitted by division. Only army can requisition replacements on the basis of estimates of future casualties; other units requisition only when their strength falls below authorized strength. The replacement company then, will normally receive replacements only after casualties have been sustained.

The commander of the division replacement company is responsible for moving replacements from the supporting battalion to his company area located near the division rear echelon. When he is notified when and where to pick up a group of replacements, the company commander makes the necessary arrangements for transportation. An officer or noncommissioned officer accompanies the truck convoy as

a control agent. This representative obtains and checks the records of the replacements and determines that all men are present. He also receives the orders assigning the group to the division.

In the meantime the replacement company commander makes arrangements to house and feed the replacements. He must coordinate with G-4 because time is quite often limited and rations must be drawn on short notice. A standard operating procedure permitting the replacement company commander to deal directly with the agency involved will solve this and other similar problems. When the replacement company commander is confronted with a problem that he can not handle he must get assistance from the adjutant general. On major problems or problems which have not been dealt with before, the adjutant general requests assistance from G-1.

The special service officer, the chaplain, and the American Red Cross representative are informed as to the number of replacements and their expected time of arrival so they can make the necessary preparations and perform morale and religious activities. These agencies provide special facilities for the new replacements. The exchange officer, the finance officer, and the surgeon provide facilities for the replacement company when appropriate.

## RECEPTION OF REPLACEMENTS

All replacements, including men returned to the replacement stream from hospitals, are processed through the division replacement company. If replacements arrive after dark they are fed and quartered as soon as possible and processing is started the next morning.

On arrival in the area a replacement company officer orients the incoming troops on the processing procedure. The men are told where the latrines, post exchange, Red Cross, and special service installations are located. Rules concerning bathing, blackouts, and local security are published. Other instructions governing mess, housekeeping, and recreation are made known.

When the men are assigned to platoons of the replacement company they are told to which infantry regiment or

other unit they are assigned. They are given postal locator cards and instructed on how to fill them out so that their mail can be delivered with the minimum delay. Rosters and records are verified to prevent errors.

As soon as possible the men are issued division insignia. Every effort is exerted to make each individual feel that he is now a part of a combat organization. The division commander should personally welcome the newcomers to the division. If this is not practicable, either the assistant division commander or the chief of staff should welcome the replacements. The job should not be delegated to lesser assistants. The men want to see and hear the man who is actually commanding them. A forthright talk outlining the combat record of the division and telling the men what is expected of them is the best form of welcoming address.

Replacement platoon leaders follow up the welcoming address by telling the men as much as possible about their new regiments. A summary of the regiment's previous combat experiences followed by a clear cut picture of the present combat situation will give the men an accurate idea of what combat is like. Exaggerated stories of the kill-or-be-killed variety and light-hearted understatements of the tactical situation are equally harmful. In all cases it is best to tell the men the truth in a straightforward manner.

## PROCESSING AND TRAINING

Under normal circumstances replacements are kept in the replacement company for a minimum period of three days. During this time the personnel section of the company checks to determine that the men's records are complete and up to date. The division adjutant general prepares the necessary administrative forms and delivers them to the receiving regiment.

During this period the men are given special tactical training to prepare them for the particular type of fighting in which the division is engaged. The G-3 prescribes the training program for each group of replacements and the company commander supervises its execution. Maximum

value is derived from this short refresher training program when combat veterans are used as instructors. Throughout the program emphasis is placed on those phases of training which are particularly important for the type of fighting currently in progress.

Showdown inspections are conducted to determine that each man has the necessary combat equipment. Weapons are checked to determine that they are in firing condition. Shortages are immediately replaced. When the division is taking part in a specialized operation such as mountain fighting, special equipment may be issued at the replacement company.

## FORWARDING TO ASSIGNED UNITS

Orders are issued by the adjutant general assigning replacements to company sized units based on the desires of the regimental commanders. When the replacements have completed processing they are transported to regimental areas on division or unit transportation.

The regimental commander or his representative meets them and welcomes them to his unit. Again the men are given facts regarding the combat situation.

The regiment furnishes guides to take the men forward to the battalions. At the battalion command post they are met by a battalion officer and given the necessary information on the battalion situation. Battalion arranges for the necessary guides to take the men forward to their assigned companies.

If possible the company commander personally meets the replacements and orients them on the company situation. Without delay they are assigned to platoon and squad organizations. Every commander makes an effort to personally meet the new fighting men and to tell them the facts about the combat situation.

When the replacement gets to his newly-assigned squad he is teamed up with a combat experienced man. Regardless of what he has learned in training centers, his combat

veteran "buddy" can give him some added pointers that will make him more valuable to the company and that may save his life.

## CONCLUSION

Addition of a replacement company to the infantry division is designed to bridge a gap which was found to exist in the replacement channel used in World War II. Establishment of an administrative organization in the replacement chain at the division level accomplishes three functions:

1. Each new fighting man is made to feel that he is a part of a definite unit before he is sent into combat.
2. Regiments and battalions are relieved of the administrative functions incident to processing replacements.
3. Each man is fully oriented on the combat situation and is given special training for the particular type of operation facing his unit before being sent into combat.

## A Front Line Rifle Platoon in Defense

Dear Bill:

Say, Bill, I'm on the spot. As you know, the next Reserve Officers' Association camp is coming up in about a month and a half. Several of the men have suggested that we conduct another platoon problem, and we plan the rifle platoon in defense. The only hitch is I've been ordered up-state to organize a new unit and will be gone at that time. As senior officer in our district I'm going to ask you to take over and put on this problem for me. Thanks!

Joe

Now it looks like Bill is on the spot. Working up a conference and practical exercise on the rifle platoon in defense is not a job that can be done in a few hours. In fact, if Bill had ever been an instructor at a service school he would know that it requires many hours of preparation to put on one hour of effective instruction. Unfortunately, Bill hasn't the usual time to set up this instruction. To make matters more difficult, the organization, armament, and the method of employment of the rifle platoon have been changed considerably since the war.

Bill's problem is one that is common to the Organized Reserve Corps, the National Guard, and the Regular Army. It takes time and effort to organize good instruction. Even when time is available, it is sometimes difficult to find the information. But in this case, at least, we can help Bill by giving him an outline for a conference, a plan for a tactical walk and demonstration, and a plan for a practical exercise.

ALLOCATION OF TIME

| | |
|---|---|
| Conference (Rifle Platoon in Defense) | — 50 minutes |
| Tactical walk | — 50 minutes |
| Practical exercise | — 50 minutes |
| Discussion | — 50 minutes |

### CONFERENCE

Method: Ask questions throughout the period to bring out specific points that are covered. For example: What is the mission of the front-line platoon? Why are all three squads in the platoon placed on the MLR?

Charts and training aids: Blackboard, chalk, and eraser.
Organization chart—Figure 1.
Figures 2-8 to be drawn on the blackboard or prepared charts to be displayed at the appropriate time.

### TACTICAL WALK

Method: Prior to the class the instructor selects an appropriate area for practical work. The area should be on a forward slope in fairly open terrain and should provide good fields of vision for the class. The area should be easily accessible and transportation for the class should be arranged. An ideal area contains a point from which the class can observe the entire area.

Charts and training aids: Appropriate maps or sketches; stakes to represent personnel and weapons; tags, engineer tape, and bleachers or other suitable facilities for conducting a conference.

### PRACTICAL EXERCISE

Method: Each student is issued a map or sketch of a piece of terrain and asked to plot the defensive position of each man of the platoon.

Charts and training aids: Maps or sketches.
Paper and pencils.

### DISCUSSION

Method: At the conclusion of the practical exercise, the instructor conducts a class discussion of student solutions. The instructor points out the advantages and disadvantages of each solution so all can hear.

Charts and training aids: Maps or sketches.

## Section I
## CONFERENCE

The mission of infantry in the defense is, with the support of other arms, to stop the enemy by fire in front of the battle position, to repel his assault by close combat if he reaches it, and to eject him by counterattack if he succeeds in entering it. The front-line rifle platoons, however, are charged with only the first two phases of the defensive mission of the infantry; that is, they *stop* and *repel*. They are not assigned the mission of *ejecting*.

The defense takes maximum advantage of the terrain and of the unit's firepower. Simply stated, the principles of defense are:

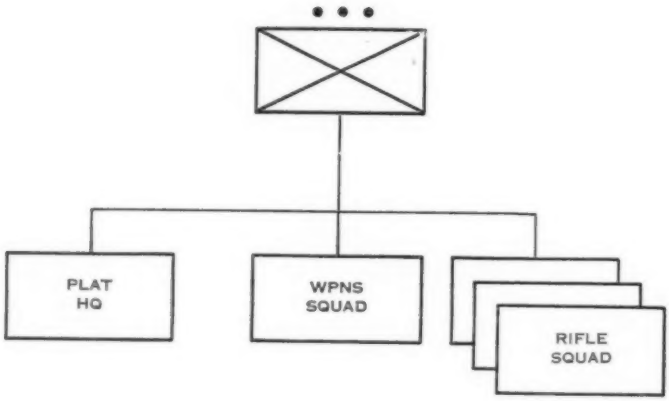
Organization of key terrain
Mutual support
All-around defense
Defense in depth
Coordinated fire plan
Coordinated antitank defense plan
Flexibility

### ORGANIZATION

A rifle platoon includes a platoon headquarters, three rifle squads, and a weapons squad (see figure 1). The platoon headquarters, or command group, is composed of a platoon leader, platoon sergeant, assistant platoon sergeant, and two messengers. The weapons squad contains a four-man light machine-gun team, a four-man rocket launcher team, and a squad leader. The rifle squad has nine men. The organization and armament of the rifle platoon is illustrated in figure 1.

### FIREPOWER

The squad leader is usually too occupied with command functions to deliver sustained fire. This, then, leaves the rifle platoon 21 rifles and 3 automatic rifles on the main line of resistance to place a large volume of aimed fire on the enemy. Under combat conditions a rifleman can fire from 8 to 15 rounds per minute. He can fire several times




| | | |
|---|---|---|
| 1st or 2d Lt<br>Plat Ldr (C)<br>1 Sgt 1st Cl,<br>Plat (R)<br>1 Sgt, Plat,<br>Asst (R)<br>2 Pvts, Msgr (R) | 1 Sgt, Sqd Ldr (R)<br>1 Pfc, Gnr, MG (P)<br>1 Pvt, Gnr, MG<br>Asst (P)<br>1 Pfc, Gnr, Rkt (P)<br>1 Pvt, Gnr, Rkt,<br>Asst (P)<br>2 Pvt, Am Bearer (C)<br>2 Pvt, Am Bearer (R) | 1 Sgt, Sqd Ldr (R)<br>1 Cpl, Sqd Ldr,<br>Asst (R)<br>1 Pfc, Rman,<br>Auto (P)<br>1 Pvt, Rman, Auto<br>Asst (R)<br>5 Pvt, Rman (R) |
| 1 Cbn, Cal .30<br>4 R, Cal .30, M1 | 4 P, Auto, Cal .45<br>2 Cbn, Cal .30, M2<br>3 R, Cal .30, M1<br>1 LMG, Cal .30<br>1 RL, 2.36-inch | 1 P, Auto Cal .45<br>7 R, Cal .30, M1<br>1 R, Auto Cal .30<br>1 R, M1C (Sniper)<br>Cal .30 |

FIGURE 1.—Organization and equipment of the rifle platoon.

as many unaimed rounds. The effective rate of fire for the automatic rifle is 150 rounds per minute.

Additional fire support is provided by the light machine gun and the rocket launcher in the weapons squad, as well as by other supporting weapons placed in the platoon area by higher commanders. You will seldom find only the platoon weapons located in a defensive position. Usually the company commander places a 57-mm rifle in the platoon area, and the battalion commander may assign a pair of light or heavy machine guns or a section of 75-mm rifles. Sometimes one or more tanks from the regimental tank company occupy positions in a front-line platoon area.

## FRONTAGE

The company commander assigns frontages to the rifle platoons in accordance with the natural defensive strength of the position and relative importance of the defense area. Where a platoon occupies a vital area affording poor observation and poor fields of fire—as in heavily wooded or broken terrain—it is assigned a frontage of approximately 300 yards. Where the area is more open and affords longer fields of fire, the frontage may be 600 yards. The frontage physically occupied by a platoon is determined by the width of the interval that can be left between foxholes without creating a large gap in the defense, and by the number of supporting weapons within the area. The width of the intervals depends on such factors as observation, fields of fire, and obstacles. As guide figures, in close terrain single foxholes are placed about 5 yards apart and double foxholes about 10 yards apart. In open terrain, single foxholes may be 10 yards apart and double foxholes 20 yards apart. Crew-served weapons within the platoon area are usually assigned 25 yards of frontage. The portion of the front not physically occupied is covered by fire.

In addition to preparing the primary positions of each squad along the main line of resistance, the platoon prepares for all-around defense of its area. Construction of supplementary positions for each squad permits delivery of fire to the flanks and the rear and gives depth to the

platoon position. If good fields of fire to the flanks and rear are available from the front-line foxholes, the depth of the platoon area may be as little as 50 yards. If it is necessary for elements of the platoon to move out of their forward positions to secure adequate fields of fire to the rear or flanks, a depth up to 200 yards may be assigned.

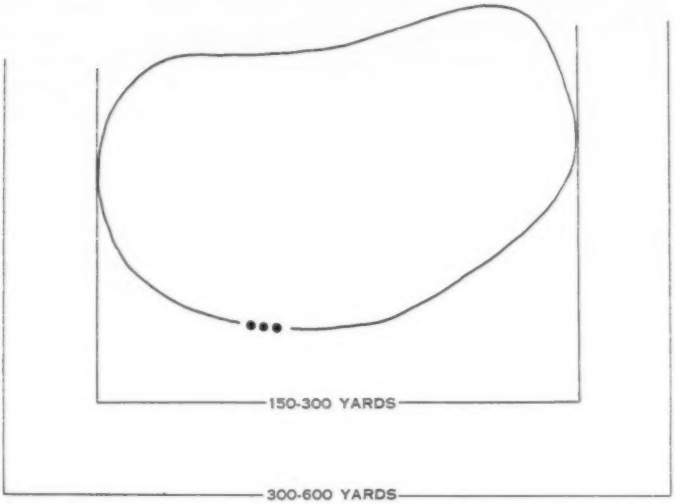



FIGURE 2.—A platoon area.

## ORGANIZATION OF THE DEFENSIVE AREA

The employment of the front-line rifle platoon in defense can best be shown by taking up step by step the organization of the defensive position. Figure 2 indicates the map symbol for a platoon area. Within this symbol we will indicate the successive stages in the build-up of a platoon defensive position.

The company commander usually places two platoons on the main line of resistance and one in support. The rifle platoon, however, can usually best accomplish its mission

by placing all three of its squads generally abreast, facing the expected direction of enemy attack (see figure 3). This departs from the two-forward-and-one-back dispositions that exist within units higher than the platoon, but it enables the platoon to have all of its fire power available to *stop* the enemy in front of the main line of resistance. A squad is not held in support because the missions assigned to a support unit—adding depth to the position, limiting penetrations, protecting flanks or rear, or executing local counterattacks—are more effectively accomplished by units containing more combat power than the rifle squad.

FIGURE 3.—Distribution of squads.

With all three squads on the MLR the squads are able to cover their front and the intervals on their flanks, as well as mutually supporting adjacent platoons. In some cases only a very narrow gap will exist between the platoons on the front line. Then it is possible to locate the squads abreast without bending back the flanks, but if this gap is wide, the flanks are refused to gain mutual support. Each squad is assigned a sector of fire so that squad sectors overlap and the sectors of the flank squads extend in front of the adjacent units. (See figure 4.)

The main line of resistance is normally located on the forward slope. It should provide as many as practicable of the following advantages:

Observation to the front and flanks.
Good fields for grazing and flanking fire of automatic weapons.
Cover and concealment for troops, weapons, and defensive works.
Best use of natural obstacles, particularly antitank obstacles.
Terrain that facilitates the movement of troops and supplies within the battle position.
Protection from close hostile observation into the battle position.

The outline of the platoon defense area on the MLR is created by foxholes of the rifleman. The trace of this line

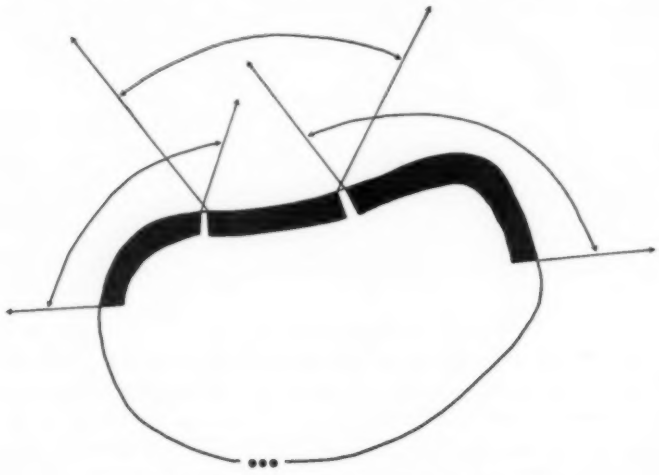


FIGURE 4.—Squad sectors of fire.

is made irregular to facilitate the development of flanking fire; however, the formation of large salients or re-entrants is avoided. This irregular line conforms to the general trace of the military crest (the point below the crest which affords fields of grazing fire) when on a forward slope, and is placed to take maximum advantage of concealment and mutually supporting fires between individual

weapons. Seldom will two platoon areas have the same shape, since the organization of the position must conform to the terrain. Under certain conditions dictated by the tactical situation or the terrain, a reverse slope position may be more advantageous than a forward slope position; for example, when a forward slope defense fails to provide cover and concealment, or the terrain permits the attacker to place direct and observed fire on the position.

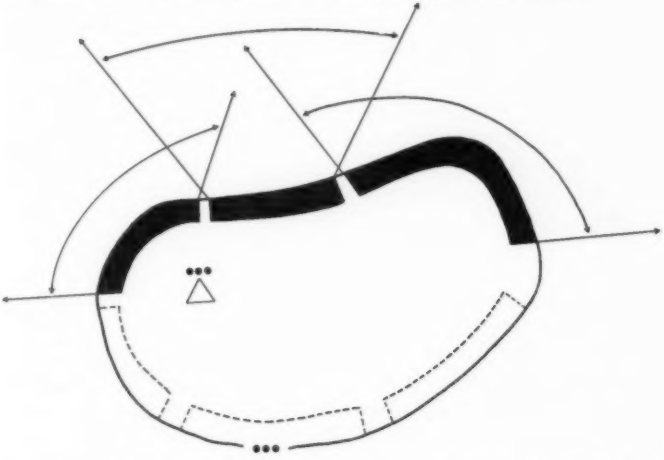


FIGURE 5.—Squad supplementary positions and platoon combined CP and OP.

In addition to the primary positions along the MLR, the platoon must be prepared to defend its area from attack in any direction. This is accomplished by construction of supplementary positions for each squad which will enable them to fire to the flanks and the rear. (See figure 5.) The supplementary positions should be located as close to the forward positions as the terrain permits—usually just in rear of the topographic crest so that riflemen can obtain good fields of fire. The depth of the platoon area is determined by the location of these positions. Normally, the depth is 200 yards or less. In open flat terrain riflemen can shift their fire to the rear from their primary positions. It is not anticipated that men can be readily shifted

from the primary to the supplementary positions during a fire fight; however, adjustments are made when conditions permit and the situation dictates a shift. Natural cover, drainage lines, ditches, and other covered routes are used in moving to supplementary positions.

The platoon leader establishes a platoon observation post where he can observe and control the three squads. If this is impossible, he takes a position where he can control part of the platoon, and has the platoon sergeant take a position where he can control the remainder of the platoon. The platoon leader keeps one messenger with him and sends the other platoon messenger to the company command post. Communication within the defense area is usually by messenger, voice, or arm-and-hand-signals; however, any communication equipment available is used.

## LOCATION OF WEAPONS

Figure 5 gives a general picture of the three rifle squads of a platoon organized for defense, but it does not give the picture of the firepower within a platoon defense area. Keeping in mind the fact that squad sectors of fire overlap, we'll start with a new series of sketches to show the location of automatic weapons, antitank weapons, and nonorganic weapons frequently located within a platoon defense area.

In a defensive situation the machine guns from the heavy weapons company will be located in the front-line platoon areas. To take full advantage of their firepower they are placed in the position affording the best field of grazing fire. Depending upon the coordinated antitank defense plan, one or more of the 75-mm rifles from the heavy weapons company may be placed in the platoon defense area. Normally, one of the 57-mm rifles from the weapons platoon of the parent company is located in the platoon area. Figure 6 indicates a schematic disposition of these weapons.

After these nonorganic weapons have been placed in position, the weapons of the platoon weapons squad are given the next priority for positions. The light machine

gun is tied in with the battalion fire plan and is placed where it can fire its assigned final protective line and afford the best coverage of the platoon defense area. The 2.36-inch rocket launcher is primarily an antitank weapon so it is placed to provide close-in antitank protection for the platoon. Figure 7 shows how the defensive fires in front of the platoon will appear when the sectors of fire of these two weapons are indicated.

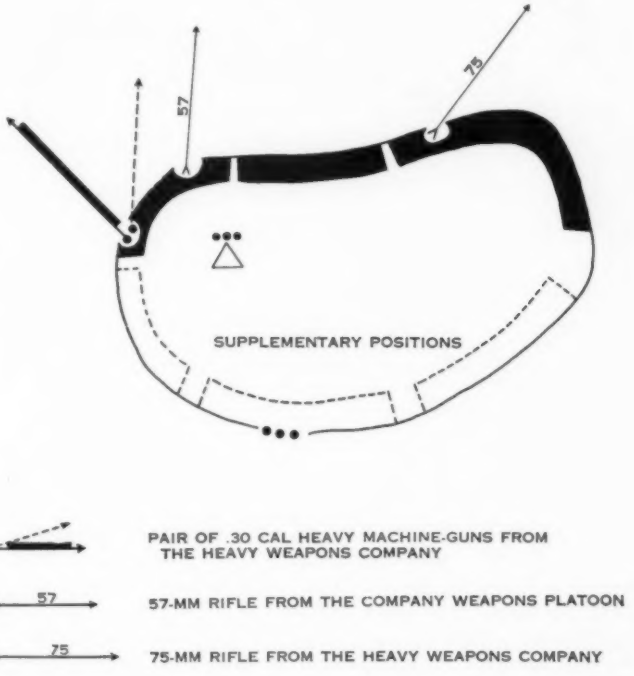



FIGURE 6.—Nonorganic weapons usually found in a platoon area.

## LOCATION OF SQUAD WEAPONS

After the positions have been selected for the supporting weapons the platoon leader designates general positions and sectors of fire within each squad sector for the squad

automatic rifle. Automatic rifles are used to fire across the front of an adjacent squad, to fire on a specific terrain feature, or to cover gaps in the final protective fires of supporting weapons.

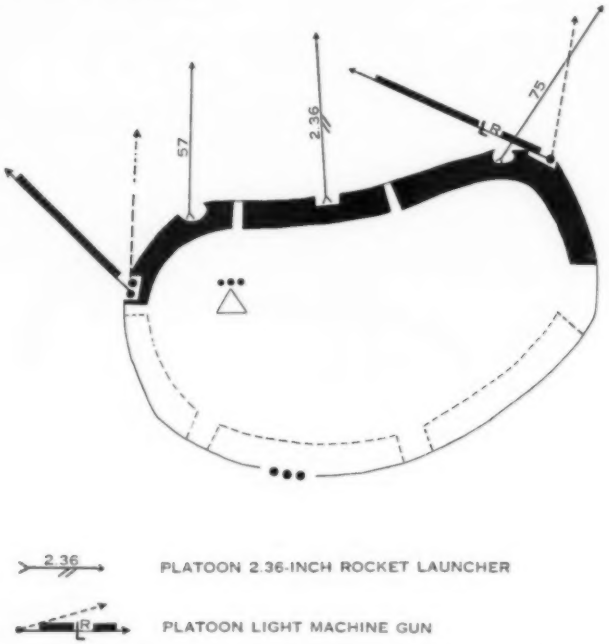



FIGURE 7.—Nonorganic and organic weapons that may be located in a platoon area.

The antitank rifle grenadiers of the squad are located to provide close-in antitank protection to the squad. Positions for grenadiers are coordinated by the platoon leader to insure close-in antitank protection.

Figure 8 shows schematically the location of the automatic rifle and the rifle grenadier of the center squad as well as the location of riflemen and the squad leader. Riflemen are placed on the perimeter of the squad position where they can get a clear field of fire to the front and provide protection for near-by supporting weapons. The positions

for riflemen are checked by squad leaders. The squad leader is in position where he can see and control the elements of the squad.

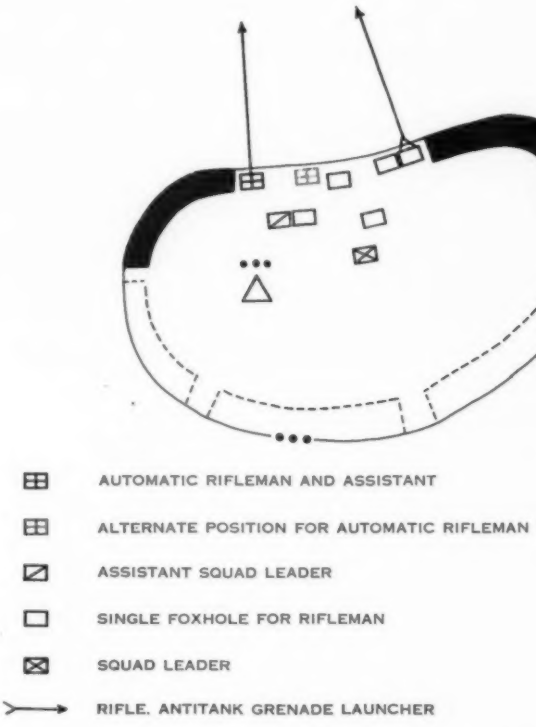



FIGURE 8.—Disposition of squad automatic rifle and antitank grenade launcher.

## SECURITY

The platoon leader insures the security of the platoon by being personally alert, by keeping the required number of personnel alert, and by maintaining a system of sentinels and observers.

As soon as the platoon arrives at its defensive area, at least one observer is posted to give warning of hostile ground and air approach. Similarly, an observer is posted

in each squad area. The automatic rifleman is placed to cover the most likely avenue of approach. During periods of darkness, double sentinels are used to act as listening posts to cover hostile avenues of approach. To insure proper vigilance, provisions are made for the relief of sentinels. The security measures established by the platoon are closely coordinated with the local security of the rifle company.

## PRIORITY OF WORK

Immediately upon the occupation of a position, steps are taken to strengthen the defense by clearing fields of fire and by construction of individual shelters, emplacements for weapons, and obstacles. Concealment and camouflage are carried out concurrently with these construction tasks. The normal priority of work is:

Emplacement of weapons and riflemen in primary positions.

Concealment and camouflage (concurrent).

Clearing fields of fire.

Preparation of supplementary positions.

When practicable, these tasks are carried on concurrently. The automatic rifles, machine gun, and rocket launcher are ready to fire while the position is being prepared.

Organization of the ground is constantly improved; no defensive area is ever complete—it is continually improved as long as a unit occupies it.

## CONDUCT OF THE DEFENSE

When a unit is under attack, the fire of the weapons, other than tanks located in a front-line platoon, is held until the enemy comes within effective rifle range. After opening fire all weapons in the platoon initially direct their fire at appropriate targets within their assigned sector. As the enemy gets closer to the position the rate of fire is increased. If a defense area is threatened by assault, final protective fires covering the threatened area are immediately employed. If the enemy succeeds in rushing the position he is met with fire, grenades, and bayonets.

If the platoon position is threatened from the flank, the platoon leader directs specific squads, or portions thereof, to move to supplementary positions to counter the threat. When subjected to bombardment the men remain in their foxholes. When the enemy fire lifts or shifts the men immediately engage the attacking force with all of the firepower at their command.

The platoon holds its position at all cost. It withdraws only on order from a higher commander.

## Section II
## TACTICAL WALK

One method of continuing the exercise is to conduct a tactical walk over terrain that has been organized as a front-line platoon position. In this way the students get a picture of the position as a whole and also of the individual riflemen and their relation to the other weapons within the position.

If suitable terrain is available, the instructor can outline a platoon defensive position by using different colored stakes to represent personnel and weapons. The observers will get a good picture of how the weapons are distributed across the front, cover, assigned sectors of fire, and mutual fire support. The instruction can be made more impressive by outlining sectors of fire with engineer tape or other marking devices.

Even under circumstances where the instructor has very limited training facilities, an imaginative instructor can get the instruction across to the students by use of a sand table, a terrain board, or even an enlarged sketch. Frequently the instructor can improvise, without cost, sufficient training aids to conduct the instruction. He can, for example, obtain a map or an aerial photo from a local county, state, or federal office. An enlarged portion of this map, contoured and drawn to scale, can be mounted on a wall or a blackboard. Using colored cardboard, he can make simple designs representing riflemen, automatic rifles, machine guns, rocket launchers, grenade launchers, and recoilless rifles. Using a simple training aid such as this, he can talk the

class through the tactical walk. Instruction can be conducted on a sand table or terrain board by using colored cardboard cut-outs or map tacks.

Regardless of how the instruction is conducted, the instructor should keep in mind that the purpose is to give the students a visual image of a rifle platoon properly disposed on the terrain. He emphasizes the following points by calling attention to specific features of the position:

Mutual support between the platoon in position and the platoons (assumed) on the flanks.
The final protective lines of the machine guns located in adjacent platoon defense areas.
Location of machine guns in the platoon position.
Disposition of the three rifle squads.
Disposition of rifle grenadiers and automatic rifles.
Disposition of the 2.36-inch rocket launcher.
Local security.

After discussing each of these features, the instructor answers any questions brought up by the students.

## Section III
## PRACTICAL EXERCISE

The practical exercise, like the tactical walk, is best conducted on the terrain. Lacking this, however, it can be conducted using the same training aid used for the tactical walk. If only a single enlarged terrain sketch is available, the instructor can work up enthusiasm by the student participation method.

If the practical exercise is conducted on the terrain, the instructor designates on the ground the boundaries and limiting points and assumed locations of adjacent platoons. He may also designate the location and direction of fire of machine guns located in the platoon area and in adjacent platoon areas. Each student is issued a copy of a sketch or a map of the area and given time to complete the requirement given below.

If the exercise is conducted in a classroom the instructor puts on the enlarged sketch the boundaries, the limiting

points, and the sectors of fire of machine guns of the heavy weapons company. Each student is then given or required to reproduce a simple sketch of the enlarged sketch. Each student is required to plot the following information on his map or sketch:

(1) Location of primary and supplementary positions for each squad.

(2) Location of primary and supplementary positions for each automatic rifle.

(3) Location of the rifle grenadier.

(4) Location of the 2.36-inch rocket launcher.

(5) Location of the light machine gun showing the final protective line and sector of fire.

(6) Location of the command post-observation post.

Some of the most common errors in the organization of a defensive position are:

(1) Failure to provide for mutual support between platoons.

(2) Failure to check final protective lines for grazing fire.

(3) Failure to place all three rifle squads on line.

(4) Failure to place the 2.36-inch rocket launcher in the proper position.

(5) Failure to indicate the supplementary positions for each squad and for each crew-served weapon.

(6) Distributing personnel across the entire front rather than covering a portion of the assigned area with fire. (In some cases, particularly very close terrain, this may not be practicable.)

## Section IV
## DISCUSSION

A discussion of student solutions is conducted at the completion of the practical exercise. Students are asked to give their solutions and the instructor, by questions, guides the discussion toward an approved solution. It can be expected that several solutions other than an approved solution will be brought out. As in any type of terrain problem there are a number of logical solutions. Points to be emphasized in discussing these solutions include:

Mutual support between squads and platoons.
Sectors of fire for squads and automatic rifles.
Location of squads and supplementary positions.
Sectors of fire of the LMG and the 2.36-inch rocket launcher.
Coordination with other units.

The instructor is alert to point out the errors and praise correct solutions. Learning is a trial and error process and frequently a wrong student solution provides the instructor with an opportunity to emphasize more strongly the correct solution. The value of the instruction depends upon the ability of the instructor to maintain the interest and enthusiasm of his students.

# The Heavy Mortar Company in Support of a Regimental Attack

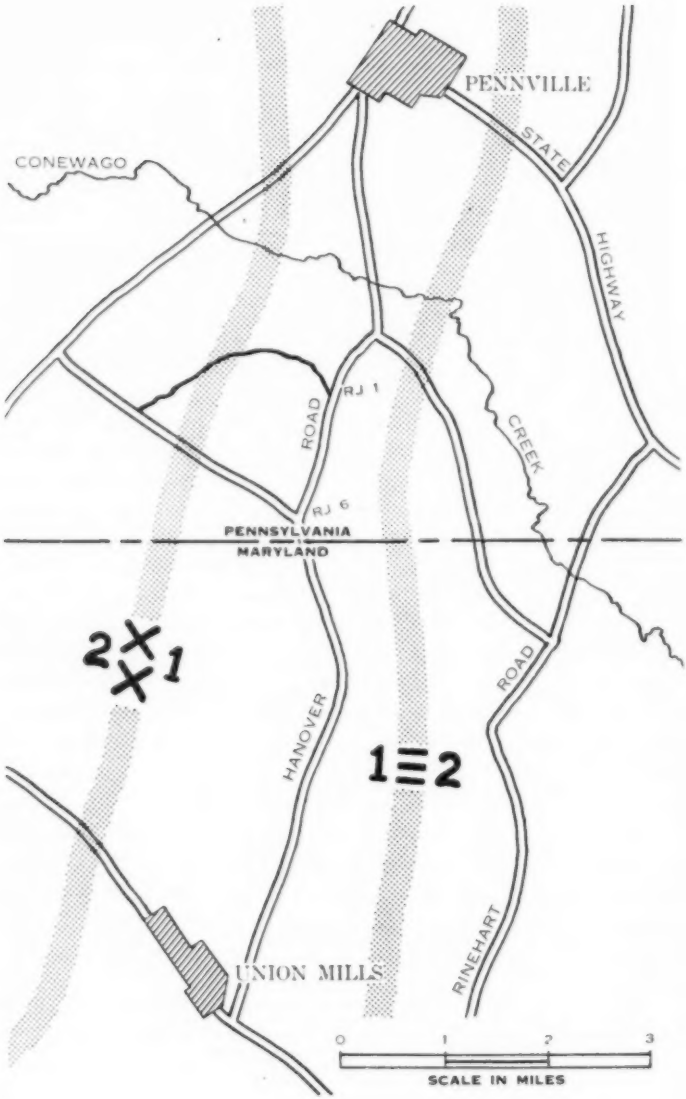
Principles governing the employment of the heavy mortar company in attack were discussed in the July 1948 issue of the INFANTRY SCHOOL QUARTERLY. In the following article these principles are applied to a practical exercise in which an infantry regiment plans and executes an attack with heavy mortar support. The exercise is designed to illustrate the actions of the heavy mortar company during movement to contact, and in the planning and conduct of the attack to include reconnaissance, liaison, selection and occupation of positions, coordination and control of fires, displacement, and ammunition supply.

The effective range of the heavy mortar is 4,400 yards; the maximum deflection shift without moving the baseplate is 700 mils. These characteristics of the weapon influence its tactical employment. Improvements in the heavy mortar and in its ammunition, permitting fire at longer ranges and traverse over a wider sector, will permit greater flexibility in choice of positions and in the method of employment.

## GENERAL SITUATION

The 1st Infantry Division is part of a larger force which is advancing northward into PENNSYLVANIA on a broad front. The division mission is to capture PENNVILLE and to be prepared to continue the attack to the north. Aggressor forces of undetermined strength are known to occupy PENNVILLE.

The 1st Infantry Division is disposed in two columns abreast. The left column, with the 1st Infantry leading, is advancing on the HANOVER ROAD; the right column


PENNVILLE
STATE
HIGHWAY
CONEWAGO
ROAD
RJ 1
CREEK
RJ 6
PENNSYLVANIA
MARYLAND
2
1
HANOVER
1≡2
ROAD
UNION MILLS
RINEHART
0
1
2
3
SCALE IN MILES

Map 1.

with the 2d Infantry leading, is advancing on the RINEHART ROAD. The 2d Infantry Division is operating on the left. The 1st Division Reconnaissance Company is maintaining contact with elements of another corps (not shown on map) operating on the right. (See figure 1.)

Colonel 1st Infantry has organized his regiment for the movement as follows: The Intelligence and Reconnaissance Platoon is reconnoitering ahead of the column; the 1st Battalion, reinforced by the attachment of two heavy tank platoons, a heavy mortar platoon, and an engineer platoon is the advance guard; the main body follows in the order 2d Battalion, Heavy Mortar Company (-), Heavy Tank Company (-), 3d Battalion. Company A, 1st Engineer (C) Battalion (-) and the 1st Field Artillery Battalion are following the 1st Infantry. The regimental commander and his party are marching at the head of the main body. All elements of the regiment in the column are motorized. Service elements not required for the movement have been left in a train bivouac for the time being.

## FIRST SITUATION

At 0800, 1 October, the advance guard of the 1st Infantry was approaching UNION MILLS. Company A, with one tank platoon attached, was in the lead. It had not yet made contact with the enemy. Aerial reconnaissance reports relayed to Lieutenant Colonel 1st Battalion during the march disclosed that Aggressor troops in undetermined strength were preparing positions along the high ground north of CONEWAGO CREEK, and that at 0715, a column of approximately 500 foot troops was observed moving south. The head of the enemy column was two miles north of PENNVILLE.

At 0815, the Intelligence and Reconnaissance Platoon reported contact with an Aggressor motorized patrol three miles north of UNION MILLS, near the PENNSYLVANIA border. Subsequently, the following messages were received from the Intelligence and Reconnaissance Platoon:

At 0825: "Enemy patrol withdrawing. Am continuing on mission."

At 0850: "Enemy roadblock at RJ 6. Am investigating."

At 0915: "Roadblock at RJ 6 manned by force estimated to be at least a rifle platoon with machine guns and at least one antitank gun. Have lost one ¼-ton truck and three men. Cannot advance."

Lieutenant Colonel 1st Battalion ordered Company A to close on the Intelligence and Reconnaissance Platoon, detruck, and attack the roadblock. The remainder of the advance guard was directed to halt and to prepare to detruck on order. The attached heavy mortar platoon at the tail of the advance guard halted in the outskirts of UNION MILLS.

## FIRST REQUIREMENT

You are Lieutenant Colonel 1st Battalion. What are your orders to the platoon leader of the attached heavy mortar platoon at this time?

*A solution.* The battalion commander orders Lieutenant Heavy Mortar Platoon to initiate an immediate reconnaissance to select a firing position from which his platoon can support the attack on RJ 6, and to be prepared to go into position on order.

*Discussion of solution.* Lieutenant Colonel 1st Battalion does not automatically order his attached heavy mortars to occupy positions and open fire simply because contact with the enemy has been made. The situation is still too vague. Although the Intelligence and Reconnaissance Platoon has reported it cannot advance, the strength and composition of the Aggressor forces defending the roadblock cannot be estimated with sufficient accuracy until Company A has launched its attack. Company A already has support available from the attached elements of the Heavy Tank Company, and from the heavy machine guns, the 81-mm mortars, and the 75-mm rifles of the Heavy Weapons Company. If Company A succeeds in eliminating the roadblock, the heavy mortars will not be needed.

Furthermore, resupply of heavy mortar ammunition could quickly become a difficult problem on the march; therefore the platoon's basic load should not be expended until its fires are definitely needed.

Although the battalion commander cannot determine at this time whether Company A will need additional support, he must be prepared to furnish it without delay, should it become necessary. Therefore, he directs Lieutenant Heavy Mortar Platoon to make an immediate reconnaissance for suitable positions and to be prepared to occupy them promptly. As the situation is further developed, he may order these positions occupied—or he may direct additional reconnaissance in the light of later developments.

## SECOND SITUATION

The attack of Company A was successful and the enemy withdrew. The advance guard resumed its advance along HANOVER ROAD. Company A, still in the lead, had several exchanges of small-arms fire with small enemy patrols at long range. The Intelligence and Reconnaissance Platoon was reconnoitering to the right of the axis of advance.

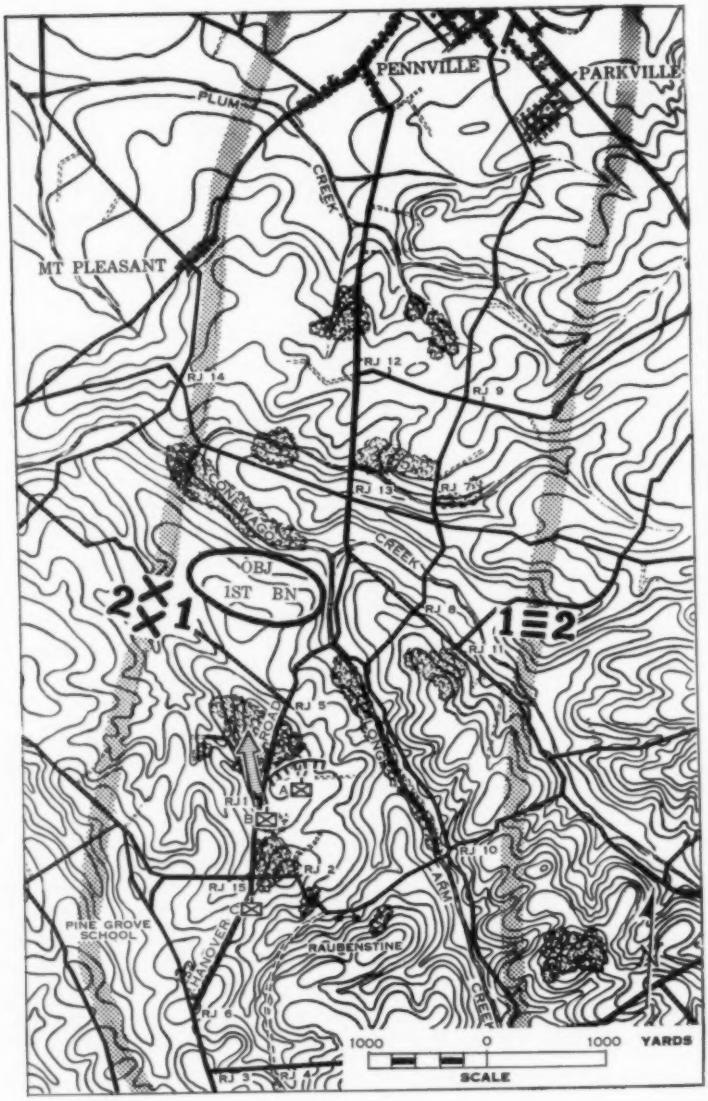
At 1030, as the point of Company A approached RJ 1, it came under small arms and light mortar fire from the high ground 300 yards northeast of the road junction. (Figure 2.) Company A deployed and attacked, and by 1100 had captured the high ground; however, further advance was prevented by automatic weapon and mortar fires from the woods to the north.

At 1100, Lieutenant Colonel 1st Battalion gave the following instructions to Lieutenant Heavy Mortar Platoon: "I have just ordered Company B to move up on the left of Company A. Both companies will attack at 1130 to seize the high ground overlooking CONEWAGO CREEK west of HANOVER ROAD and will be prepared to cross the creek on order. Your platoon will support the atttack. Select a suitable firing position and report its location to me."

## SECOND REQUIREMENT

You are Lieutenant Heavy Mortar Platoon. What position area do you select for your platoon, and what route will you use to move the platoon into the position selected?

*A solution.* The platoon leader selects a position area on the reverse slope south of RJ 2 which can be reached by a


PENNVILLE
PARKVILLE
PLUM
CREEK
MT PLEASANT
RJ 14
RJ 12
RJ 9
RJ 13
RJ 7
CONWAGO
CREEK
OBJ
1ST BN
2
1
1
2
RJ 8
RJ 11
RJ 5
RJ 1
RJ 10
RJ 2
RJ 15
PINE GROVE
SCHOOL
RAUBENSTINE
RJ 6
RJ 3
RJ 4
1000 0 1000 YARDS
SCALE

Map 2.

covered route by leaving HANOVER ROAD at RJ 3, moving east to RJ 4 then following the unimproved road north into the position.

*Discussion of solution.* Examination of the map shows that several suitable positions are available. The one chosen illustrates the characteristics of a good mortar position. It is defiladed from hostile observation and flat-trajectory fire. A grove of trees around the farm house in the position area offers concealment. It is well forward; this enables the platoon's fires to reach deep into the enemy position, avoids necessity for early displacement, and facilitates communication and fire control. The area has a covered route of approach for vehicles, and a route leading forward for displacement. The slope should provide firm ground for the mortar baseplates.

## THIRD SITUATION

Companies A and B attacked at 1130 and made steady progress toward CONEWAGO CREEK. By 1200 they were clearing the woods south of RJ 5.

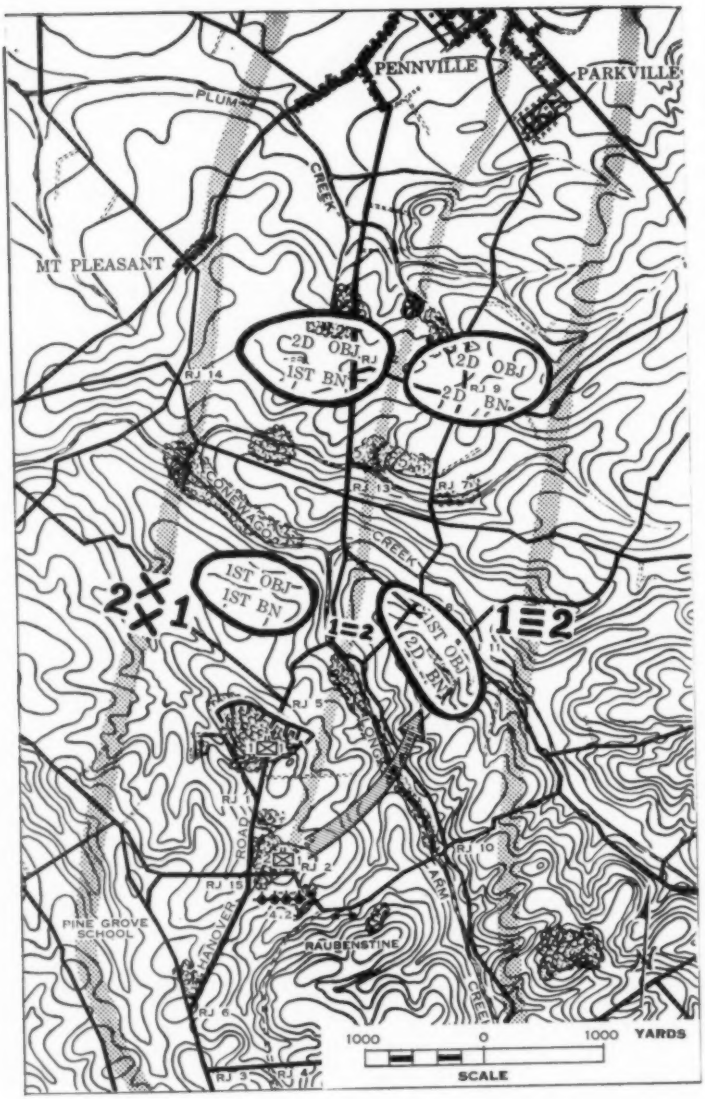
At 1200, Colonel 1st Infantry ordered the 2d Battalion to attack on the right of the 1st Battalion to seize the high ground overlooking CONEWAGO CREEK east of HANOVER ROAD. Both battalions were informed that they would cross CONEWAGO CREEK on regimental order to seize the high ground 2,000 yards to the north. (Figure 3.)

At this time the 2d Infantry on the right was generally abreast of the 1st Infantry, and was advancing against intermittent resistance in its zone.

Colonel 1st Infantry had previously outlined this plan of action to Captain Heavy Mortar Company, and had ordered him to make a brief reconnaissance, rejoin him at the 1st Battalion Command Post at 1230, and be prepared to submit recommendations for employment of his company in support of the attack. The Heavy Mortar Company (less the 1st Platoon attached to the 1st Battalion) was halted a short disance south of RJ 3.

## THIRD REQUIREMENT

You are Captain Heavy Mortar Company. What position area do you recommend for your company? How should


PENNVILLE
PARKVILLE
PLUM
CREEK
MT PLEASANT
2D OBJ
1ST BN
2D OBJ
2D BN
RJ 14
RJ 13
RJ 7
CONEWAGO
CREEK
1ST OBJ
1ST BN
1ST OBJ
2D BN
RJ 5
RJ 1
RJ 2
RJ 10
RJ 15
RJ 8
RJ 3
RJ 4
HANOVER ROAD
PINE GROVE SCHOOL
RAUBENSTINE
CREEK
1000 0 1000 YARDS
SCALE

Map 3.

your company, including the platoon now attached to the 1st Battalion, be employed to support the attack of the 1st Infantry?

*A solution.* Captain Heavy Mortar Company recommended that his company (less the 1st Platoon) occupy positions behind the 1st Battalion, in the draws west of HANOVER ROAD in the vicinity of RJ 1. He recommended that the company be employed in general support of the attack, and that the 1st Platoon revert to company control as soon as the company is in position.

*Discussion of solution.* In the selection of firing positions Captain Heavy Mortar Company is no less concerned than was Lieutenant 1st Platoon in seeking position areas which afford defilade, concealment, covered routes of approach, and accessibility for vehicles, and which are well forward to permit coverage of the zone of action with minimum displacement during the attack. The latter quality is particularly important in this situation in which the assault battalion must make a deep advance across terrain obstacles. In this case, the company commander wants to place his two remaining platoons in positions from which they can deliver fires on and beyond the battalion objectives north of CONEWAGO CREEK.

Employment of the entire company in general support provides maximum flexibility of fires, ease of coordination and control, continuity of support, and simplicity of supply. In general support, all requests for fire from heavy mortar forward observers are funneled through the company fire direction center, which has the ability to mass or distribute the fire of all platoons as the situation requires.

To bring the attached platoon back under company control as soon as the fire direction center is in operation does not deprive the 1st Battalion of heavy mortar support; it merely takes from the battalion commander the burden of command responsibility for the mortar platoon. Actually this action increases the availability of mortar support to the battalion, since it can now obtain the fire of two, or even three, heavy mortar platoons on request. Properly

executed, the release from attachment will cause no perceptible interruption in fire support. The 1st Platoon need not move from its present position. The only change is that communication between the forward observers and the firing position is no longer direct, but goes through the fire direction center.

The regimental zone of action is approximately 3,000 yards wide. Selection of positions approximately 2,000 yards south of CONEWAGO CREEK prevents one mortar platoon from being able to fire across the entire zone at the line CONEWAGO CREEK without shifting baseplates. However, the company is required by its general support mission to be able to provide support for all elements of the regiment. The company commander insures proper coverage of the regimental front by assigning sectors of fire to platoons so that at least one platoon can give immediate support to each assault battalion. Platoon sectors of fire, even with a 700-mil traverse limitation, usually overlap sufficiently so that fires of at least two platoons can be brought to bear on each important target area without shifting baseplates.

## FOURTH SITUATION

Immediately upon receipt of his original instructions from the regimental commander, and before going on his reconnaissance, Captain Heavy Mortar Company had sent for an advance party to come forward from the company and meet him at the 1st Battalion Command Post at 1230. The reconnaissance officer and reconnaissance sergeant were already with him and had assisted in making the reconnaissance directed by the regimental commander.

At 1230, Colonel 1st Infantry approved the recommendations of Captain Heavy Mortar Company and ordered him to move his company into position without delay.

Captain Heavy Mortar Company ordered his company to march to RJ 6, there to be met by a guide. He dispatched the reconnaissance sergeant to RJ 6 to meet the company and conduct it to the position area. Then he issued his instructions to the advance party, which had just arrived at the 1st Battalion Command Post.

## FOURTH REQUIREMENT

As Captain Heavy Mortar Company, what personnel did you include in the advance party?

*A solution.* Captain Heavy Mortar Company sent for the company survey team, the communication chief and a wire team, the operations sergeant, the platoon leaders of the two platoons, and the two platoon instrument corporals.

*Discussion of solution.* The reconnaissance officer and his sergeant have been with or ahead of the company commander throughout the march in order to make prompt reconnaissance at his direction. Initially, they have been moving with the advance guard. They are now immediately available to assist in guiding the company into the positions selected.

At this time Captain Heavy Mortar Company is concerned with economy of time. Good troop-leading procedure requires that he make use of additional personnel to begin organization of the position prior to its actual occupation and thus reduce to a minimum the time required to get ready to fire. The advance party listed above can establish communication, begin the computation of firing data, and determine the exact location and direction of fire for each mortar position prior to actual arrival of the mortars. The company commander can issue his oral order for the attack while the company is moving into position. The gunnery officer is conducting the movement of the company.

Composition of reconnaissance parties and advance parties is not fixed although it may prove expedient to prescribe standard parties in the company standing operating procedure for use in fast-moving situations. In a more deliberate attack, organization may begin a day or more before the arrival of the firing platoons. Composition of parties and activities performed are varied to fit the situation.

## FIFTH SITUATION

The Heavy Mortar Company was in position and ready to fire at 1330. By 1430 the 1st Battalion had reached its

first objective (south of CONEWAGO CREEK). The 2d Battalion made good progress and reached a position abreast of the 1st Battalion by 1500. Heavy mortars and artillery were firing in support of both battalions and were placing harassing fire north of CONEWAGO CREEK, where aggressor forces appeared to have organized a hasty defensive position.

Colonel 1st Infantry ordered the 1st and 2d Battalions to continue the attack at 1530, to cross the creek and capture their assigned objectives, and to be prepared to continue the attack on order to seize PENNVILLE.

## FIFTH REQUIREMENT

You are Captain Heavy Mortar Company. What is your plan for displacement to provide close and continuous support for the assault battalions in the event the attack is continued beyond the second objective before dark?

*A solution.* The company commander plans to displace by platoon, beginning with the platoon formerly attached to the 1st Battalion. It will be moved as soon as practicable after the assault battalions cross CONEWAGO CREEK to a suitable position close behind the assault echelon. (For example: covered positions are available along LONG ARM CREEK in the 2d Battalion zone of action). The other two platoons will displace upon capture of the second objective to defiladed positions north of CONEWAGO CREEK, for example, in the vicinity of RJ 7.

*Discussion of solution.* From present positions, the heavy mortars, with the exception of the platoon formerly attached to the 1st Battalion, can fire slightly beyond the second objective of both battalions. The rearmost platoon should be the first to displace. Whenever displacement can be properly anticipated and planned and time permits, it is desirable to displace one platoon at a time so that two platoons are in position to fire during the displacement. However, in a fast-moving situation, two platoons may be displaced at once. Timing of displacements must conform to the tactical situation so that mortar support is not cur-

tailed during assaults on important objectives or during critical periods of reorganization when an enemy counterattack is most likely.

## SIXTH SITUATION

At 1500, Captain Heavy Mortar Company had the following information pertaining to the status of heavy mortar ammunition in his company:

| *Unit* | *Basic Load* | *Rounds on Hand* |
|---|---|---|
| 1st Platoon | 336 | 385 |
| 2d Platoon | 336 | 270 |
| 3d Platoon | 336 | 310 |
| Company Headquarters | 210 | 235 |
| Attached Service Company Trucks | 840 | 0 |
| *Total* | 2,058 | 1,200 |

The four 2½-ton trucks with 1-ton trailers which constitute the heavy mortar company ammunition section in service company, and one 2½-ton truck with a 1-ton trailer from company headquarters, are presently engaged in resupplying the company by hauling ammunition from the army supply point serving the 1st Infantry Division, which at present is 35 miles to the rear. Sixty rounds of heavy mortar ammunition weigh approximately one ton—each 2½-ton truck and 1-ton trailer can haul 210 rounds without overloading; a ¾-ton truck and 1-ton trailer can haul 105 rounds without overloading. The company commander estimates a round trip from his present position to the ammunition supply point takes four hours.

Trucks carrying 420 rounds of ammunition are expected to arrive at the company ammunition supply point by 1600 hours; an additional 630 rounds is expected to arrive by 1700 hours.

## SIXTH REQUIREMENT

You are Captain Heavy Mortar Company. What action, if any, do you take at this time with regard to resupply of ammunition?

*A solution.* The company commander orders each platoon to furnish two ¾-ton trucks with 1-ton trailers to the ammunition sergeant to be used to haul an additional 630 rounds to the company from the army supply point.

*Discussion of solution.* The 1200 rounds now on hand, and the 1050 rounds expected to arrive during the next two hours, can easily be expended during the crossing of CONEWAGO CREEK. Firing at the maximum rate of 20 rounds per mortar per minute, the company can expend 240 rounds (four tons) of ammunition in one minute. The figures given above indicate that over 800 rounds of the basic load have already been expended.

Because of the time of turn around for ammunition vehicles, Captain Heavy Mortar Company must anticipate his needs at least four hours in advance. In order to insure that the company will have sufficient ammunition to give continued support later in the day, he takes action at this time to get additional ammunition. In taking two trucks away from each platoon, he is taking the platoon ammunition vehicle and one of the four platoon weapon carriers. This action does not demobilize the platoons; they can still displace by doubling up their mortar squads on the remaining vehicles. Such improvisations are often necessary to get the fullest use out of vehicles.

## SUMMARY

In this exercise the Heavy Mortar Company has been employed to support a regimental attack which developed rapidly from a meeting engagement. Initially, one platoon was employed independently of the company. Organization of the company permits the employment of platoons in direct support of or attached to battalions when the situation requires; however, the full capabilities of the company are best utilized by employing all platoons in general support, firing under control of the company fire direction center. By this method of employment the assault battalions can be given more flexible fire support, without interuption because of the displacement of individual platoons, and the regimental commander can more readily control the use of

heavy mortars to influence the action of his regiment. The company is capable of placing a very heavy volume of fire on targets in a short time but this capability is dependent upon ammunition supply. Weight of the primary weapon and of its ammunition limits the cross-country mobility of heavy mortar units. Whenever possible, the company is employed so that displacement and supply can be accomplished by vehicle.

## Communication in the Infantry Battalion

The increased fire power of the new infantry division must be effectively controlled if commanders are to derive the maximum benefit from it. Experiences in the fluid-type of warfare encountered in World War II taught infantrymen that an efficient and flexible communication system is essential for maintaining control in combat. This is true regardless of the level.

A communication system comprises all the means of communication available to a unit. When they are properly employed, the system is reliable in effecting control, fire direction, coordination, and exchange of information.

The means of communication used by the infantry battalion are radio, wire, messenger, visual, and sound. Each of the means has various capabilities and limitations. The extent to which each means is used is largely dependent upon the tactical requirements, personnel and equipment available, terrain, weather, and visibility. Entire dependence is never placed upon any one means. They are used to supplement each other.

Radio is used extensively as a principal means of communication in the infantry battalion. It has one distinct advantage over other means. This is the relatively high degree of mobility and flexibility of the system, resulting from the fact that no physical circuits are necessary to establish communication between radio stations. Voice radio affords rapid communication and person-to-person conversation. The use of radio results in important economies in personnel, equipment, and time required to establish communication as compared to other available means. Sixty-one of the sixty-three authorized radios in the battalion are classed as portable sets—those capable of being carried and operated by one man while stationary or in

motion. All 63 radios transmit and receive radiotelephone (voice) signals. Only one set in the battalion is designed to transmit and receive radiotelegraph (CW and MCW) in addition to radiotelephone signals. Forty-one of the portable radio sets are normally carried and operated by company officers and other designated personnel in addition to their normal duties. This economy in personnel is important since one out of eight enlisted men in the battalion is primarily assigned communication duties.

Field radio sets are designed for either amplitude- or frequency-modulated operation. Frequency-modulated radio equipment offers the advantage of reducing radio interference to a negligible value and often eliminating it completely. Because the Army's frequency-modulated radios operate in the frequency bands above 20.0 megacycles, care must be used in the selection of sites for radio stations. Radio waves tend to follow line-of-sight paths as the frequency increases; therefore, maximum ranges are obtained when unobstructed paths exist between the stations working together. Intervening hill masses and heavy vegetation will decrease the operating ranges of the sets. In order to communicate with each other, radio sets must employ the same type of modulation, transmit and receive the same type of signal (either radiotelegraph or radiotelephone), have a common channel in their frequency bands, and be within normal distance ranges. The infantry battalion uses both amplitude- and frequency-modulated radio sets. They are the SCR-536, SCR-300, SCR-608, and AN/GRC-9.

The SCR-536 transmits and receives amplitude-modulated voice signals on a single preset channel in the frequency band between 3.5 and 6.0 megacycles (1 megacycle equals 1000 kilocycles). It is a portable set which provides communication over a distance of approximately one mile. The complete set, including the two dry batteries used to provide a power supply, weighs approximately 5½ pounds.

The SCR-300 transmits and receives frequency-modulated voice signals on any one of 41 available channels in the frequency band between 40.0 and 48.0 megacycles. Desired channels are selected manually by the operator. It is also

a portable set. The normal operating range of the SCR-300 is three miles. One of two available types of dry batteries is used as a source of power. The complete set, including the larger of the two batteries which may be used, weighs approximately 38 pounds. The SCR-300 will not communicate with the SCR-536 since the two sets employ different types of modulation and operate in different frequency bands. Radiotelephone operators are authorized for all of the SCR-300's in the battalion except the two utility sets in the communication platoon.

The SCR-608 is strictly a vehicular set. It was originally developed as a part of an integrated series of radios for the Field Artillery, but it is now used extensively by the Infantry as well. It transmits and receives frequency-modulated voice signals in the frequency band between 27.0 and 38.9 megacycles. Ten of the 120 available channels may be preset so that they can be selected by push-button tuning. Basic components of the set include a separate transmitter and two identical receivers which permit continuous operation in two different radio nets. The SCR-608 provides communication over distances of 10 to 15 miles. It derives its power from either a 12- or 24-volt vehicular storage battery. The SCR-608 will not communicate with the SCR-300 since the two sets operate in different frequency bands. It may be operated from a remote location by the use of remote control equipment, RC-261.

The AN/GRC-9 is classed as a general use type set since it may be operated from vehicular or stationary ground installations. It transmits and receives amplitude-modulated radiotelegraph and radiotelephone signals in the frequency band between 2.0 and 12.0 megacycles. It will communicate with the SCR-536 since both sets have a common type of emission (voice), common channels in their frequency coverage, and employ the same type of modulation. It is necessary for the AN/GRC-9 to be tuned to the fixed frequency of the SCR-536.

The AN/GRC-9 may be tuned manually to any frequency within its coverage, or it may be tuned to any one of six crystal-controlled frequencies by use of a selector switch.

The operating ranges of the set vary depending upon the type of emission, power switch settings, and type of installation. Ranges of 15 miles on voice and 30 miles on CW operation are obtained between moving vehicles equipped with rod antennas. Between ground installations using long wire antennas, these ranges are increased to 25 miles and 75 miles respectively. The AN/GRC-9 derives its power from a 6-, 12-, or 24-volt vehicular storage battery for vehicular operation. A hand-cranked generator and a dry battery provide the power for the transmitter and receiver when the set is operated from a stationary ground installation. The set may be man-packed in four carrying bags by a three-man radio team. The total weight of the set for ground operation is approximately 115 pounds. The AN/GRC-9 may be operated from a remote location by the use of remote control equipment, RC-289.

In moving situations, radio may frequently be the only satisfactory means of communication available. Radio nets are operated in conformity with current signal orders and the tactical plan. A high degree of radio net discipline is essential. The use of correct radio procedure will serve to increase the traffic-handling capacity of radio nets and eliminate violations of radio transmission security. Other means of communication are utilized for the transmission of administrative and other low-priority traffic. Radios normally operate on a standby basis when adequate wire communication can be installed and maintained.

Wire is utilized whenever practicable as a principal means of communication in the infantry battalion. It is rapid and relatively secure from enemy interception as compared to other means. Some of the factors which must be considered in the employment of wire include the availability of the time and personnel to lay the lines, supply of wire available, type of terrain, routes of communication, weather, and visibility.

The time required to install a wire line is primarily dependent upon the length of the line and the method of laying it (by vehicle or man-pack). Wire lines are normally laid by wire teams. The composition of a wire team varies

from three to five men, depending upon the availability of personnel and the type of construction. (Short wire lines are frequently installed by one man, using portable wire-laying equipment and lightweight wire.) Part of the team lays the line avoiding heavily travelled areas where the line might possibly be damaged or torn out. The remainder of the team polices the line, making splices, ties, and overhead or buried crossings where necessary. When sufficient wire and personnel are available, wire communication can be installed in all but the most rapid advances. Additional wire can be obtained by emergency requisition when needed, and additional personnel are designated to assist in the installation of the wire system when required.

Priorities are established for the early installation of wire circuits, and the systems are expanded as situations become more stable.

The wire equipment used by the infantry battalion includes light and heavy field wire, wire-laying equipment, battery-operated and sound-powered telephones, and two types of switchboards. The lightweight wire, WD-1, weighs approximately 48 pounds per mile. It is issued in wire dispensers in which the wire is hollow-wound like a ball of twine, permitting rapid laying. Wire, W-110-B, is also used by the battalion. It weighs approximately 132 pounds per mile. Wire-laying equipment includes the hand-carried reel equipment, CE-11, which may be used to lay and recover the lightweight wire, and the RL-31 reel unit which is used to lay and recover both types of wire from a vehicle. A sound-powered telephone handset is a component part of the reel equipment, CE-11. Telephones, EE-8, are issued for use in either common- or local-battery telephone systems.

The BD-72 switchboard is the nerve center of the battalion wire system. It is capable of servicing 12 single channels of wire communication. Since it weighs approximately 81 pounds, it is necessary to provide transportation for it except for short distances. Emergency switchboards, SB-18, are also used within the battalion. The SB-18 is a lightweight unit weighing approximately 2¼ pounds which is

similar in shape and only slightly larger than a cigarette carton. It is capable of servicing six single channels of wire communication. The capacity of switchboards is increased by the use of party lines. When sound-powered telephones are utilized in a wire system, a sound-powered handset is required at the switchboard to detect incoming calls. The number of calls that can be handled simultaneously in a wire system is limited; therefore, transmissions are brief and the use of the telephone is restricted to designated personnel, except for urgent calls.

Messengers are used extensively as a principal means of communication in the infantry battalion. They are the only available means for the transmission of maps, overlays, and documents. Messengers are the best means of transmitting long messages over short distances. The tactical employment of all messengers is fundamentally the same. The companies habitually send two messengers to the battalion command post, one of whom returns to his unit. An exchange of messengers is effected whenever a command post is displaced. This practice insures that messengers are familiar with the locations of and routes to command posts. Messenger communication is also established within companies and platoons, using either regularly-assigned messengers or other available personnel. Messengers are trained to assist in the installation, operation, and maintenance of the signal equipment issued to their units.

Visual and sound signals are rapid means of transmitting short, prearranged messages over short distances. Their employment is limited only by the nature of the signals themselves and the restrictions placed on their use for security reasons. Panels, smoke, and pyrotechnics are used for marking positions, identifying units and vehicles, and sending short, prearranged messages. Improvised flags and lights may be useful for special purposes. Sound signals are employed chiefly to spread an alarm, attract attention, and transmit short, prearranged messages. Since visual and sound signals are easily misunderstood, their meanings must be simple. Meanings for certain visual and sound signals are prescribed in the signal operations instructions

(SOI). Visual signals normally included are those for identifying friendly units, lifting or calling for fire, marking targets, and reporting the progress of operations. Sound signals included are those for warning of the approach of enemy air, mechanized, and gas attacks. Commanders and patrol leaders may authorize the use of additional signals after proper coordination. Visual and sound signals are both considered auxiliary means of communication.

The infantry battalion commander is responsible for the installation, operation, and maintenance of the communication system of his unit in conformity with the tactical plan and current signal orders. He is also responsible for its efficient functioning as a part of the regimental system. The failure of a technical means of communication does not relieve him of his communication responsibilities.

As previously pointed out, approximately 12 percent of the enlisted personnel in the infantry battalion are assigned communication duties. Many others are required to perform communication functions in addition to their normal duties. The battalion commander designates certain categories of personnel who are trained to augment the regularly assigned communication personnel. Those normally selected for this training include ¼-ton truck drivers, intelligence personnel, and orderlies. Since the tables of organization and equipment do not authorize linemen for the companies, designated personnel are trained to install, operate, and maintain the company wire systems. All officers and key enlisted personnel who use the facilities of the communication system receive communication training to a lesser extent, particularly in voice radio operation, radiotelephone procedure, visual signaling, and communication security. Maintenance of adequate communication is achieved only through the combined effort and cooperation of all concerned.

## THE RIFLE COMPANY

The communication personnel authorized by current Tables of Organization and Equipment 7-17N include the communication noncommissioned officer, the bugler, 2

radiotelephone operators, and 13 messengers. They are assisted in the installation, operation, and maintenance of the company communication system by such other personnel as may be required.

The authorized signal equipment includes 12 radio sets, SCR-536; 2 radio sets, SCR-300; 2 telephones, EE-8; 1 switchboard, SB-18; 10 sets of reel equipment, CE-11; 4 miles of wire, WD-1; and 3 panel sets, AP-50.

The employment of the means of communication available to the company must be flexible in order to meet the requirements of each tactical situation. Figures 1 and 2 and the accompanying discussion indicate how the presently authorized equipment may be employed.

*Radio.* Radiotelephone communication within the company is provided by the 12 SCR-536 radios. All of them may be operated in a single company command net or in a command net and a mortar fire control net as shown in Figure 1, depending upon the number of frequencies allotted to the company. Separate sets are provided for the company observation post and the company commander so that he may be in continuous communication with subordinate elements while moving about the company's zone of action. Since the 57-mm rifle section is usually employed with squads in direct support of the rifle elements, the SCR-536 allotted to the section by the T/O & E has been given to the 60-mm mortar section. A utility set is always available to the 57-mm rifle section should it become necessary to employ it as a section. The other utility set may be furnished to elements of the heavy weapons company, either attached or in direct support of the rifle company, for operation in the company command net. The utility sets are also used for communication with patrols and outposts. Field artillery forward observers from the 105-mm howitzer batteries are equipped with SCR-536's which may be operated in the command nets of the rifle companies with which they are working.

The two SCR-300's normally operate in the battalion command net. One of them remains at the company command post, while the other accompanies the company commander whenever he leaves the CP. This makes it possible

for him to be in continuous communication with other stations in the battalion command net.

The SCR-300 is also used for communication between the rifle company and attached or supporting units equipped with similar radios. Each of the tanks in the tank company

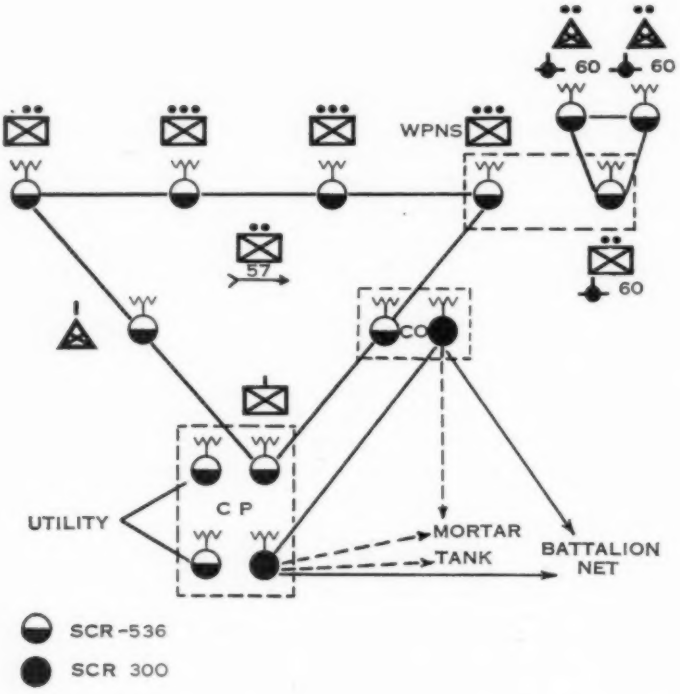



FIGURE 1.—Typical employment of organic radio sets in the rifle company.

of the infantry regiment is equipped with a radio set, AN/VRC-3. This is a vehicular adaption of the SCR-300, and the two sets will communicate with each other. Communication is established as prearranged with the tank unit commander. The heavy weapons company in the battalion and the heavy mortar company in the regiment utilize SCR-300's

extensively in their command and fire control nets. Establishing communication with either of these units is merely a matter of selecting the appropriate channel and entering the unit's net.

*Wire.* Wire is installed within the rifle company whenever practicable. A complete wire system is installed in defensive situations.

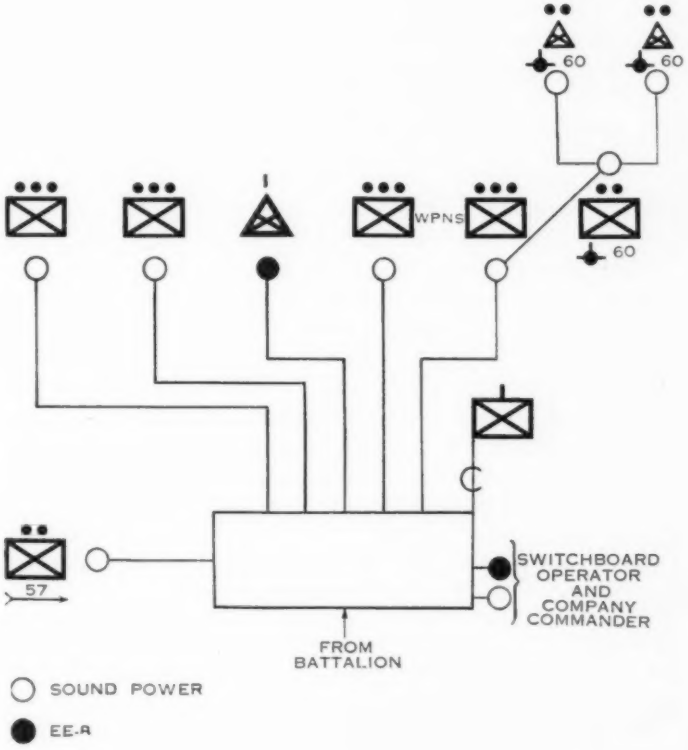



FIGURE 2.—Typical employment of organic wire equipment in the rifle company.

Wire personnel from the battalion communication platoon normally lay the wire line from the battalion switchboard to the initial location of the rifle company command post. This line terminates at the company SB-18 switchboard. One of the two EE-8 telephones doubles as the switchboard operator's phone and the local phone for the command post. The other EE-8 is used on the company OP line which is installed by designated personnel from company headquarters. This wirehead is extended to provide continuous communication between the rifle company commander and the battalion. The company CP displaces along this line if possible, utilizing the existing circuit to re-establish wire communication with battalion.

Wire circuits to the subordinate elements of the company are normally installed by platoon personnel, using sound-powered telephone equipment. Lightweight wire, WD-1, is used for all installations in the company.

*Messenger.* Messengers are authorized in the T/O & E as follows: three in company headquarters, two in each platoon, and one each in the 60-mm mortar and 57-mm rifle sections.

## THE HEAVY WEAPONS COMPANY

Communication personnel authorized the heavy weapons company by T/O & E 7-18N include the communication noncommissioned officer, the bugler, nine radiotelephone operators, and nine messengers. This group is assisted in the installation, operation, and maintenance of the company communication system by such other company personnel as may be required.

The authorized signal equipment includes 9 radio sets, SCR-300; 3 radio sets, SCR-536; 11 telephones, EE-8; 2 switchboards, SB-18; 8 sets of reel equipment, CE-11; 10 miles of wire, WD-1; and 7 panel sets, AP-50.

The manner in which the heavy weapons company is employed necessitates complete flexibility in its communication system in order to meet the changing communicaton requirements of various tactical situations. The effectiveness of the supporting fires of the company is largely dependent upon an efficient communication system and continuous

coordination with the supported units. Figures 3 and 4 indicate how presently authorized equipment may be employed.

*Radio.* The radio sets used by the heavy weapons company are the same as those used by the rifle company; however,

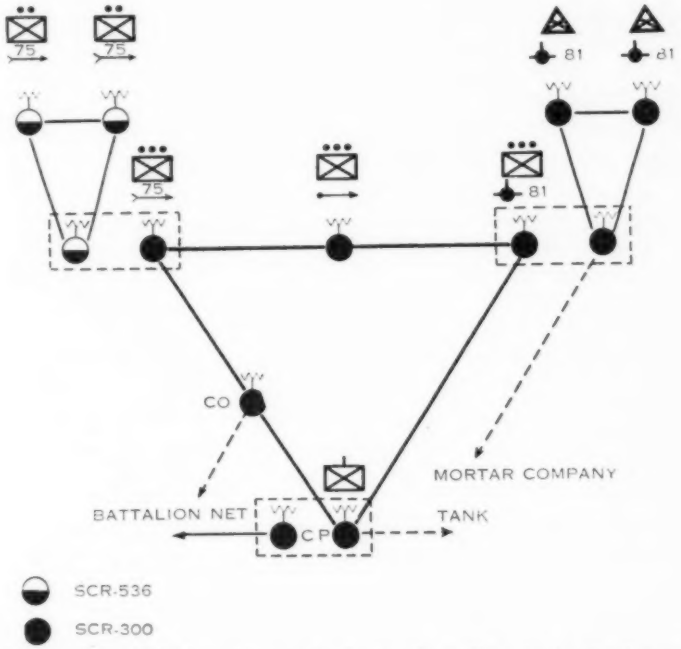



FIGURE 3.—Typical employment of organic radio sets in the heavy weapons company.

their employment is somewhat different. SCR-300's are utilized in establishing the company command net which includes the company command post and those of the platoons. Whenever the company commander leaves the CP, an SCR-300 accompanies him. This set normally operates in the company command net; however, it may be used for communicating with other nets using similar radio equipment. Another SCR-300 at the command post represents the company in the battalion command net.

The 81-mm mortar platoon is authorized four SCR-300's, one of which operates in the company command net. The other three sets are operated in a mortar fire control net on a separate channel. This is necessary to prevent interference between command and fire control traffic.

The three SCR-536's assigned to the 75-mm rifle platoon are used for command and fire control. They operate in a separate net and cannot communicate with the SCR-536's used by the rifle companies since they are preset on a different frequency.

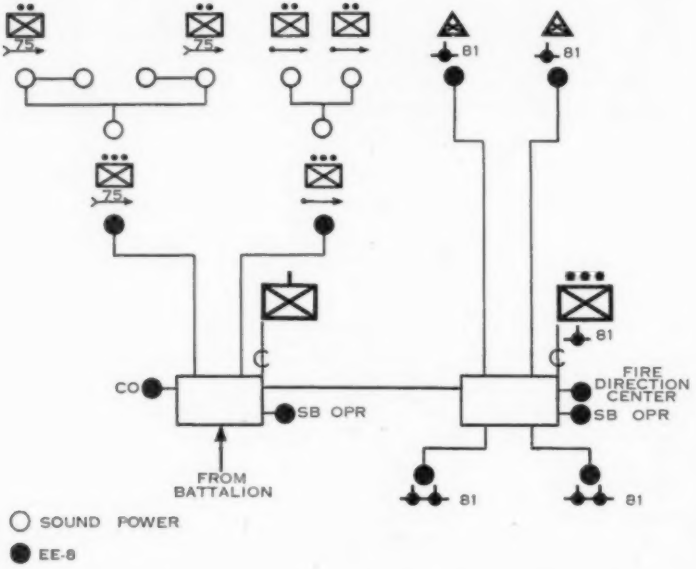



FIGURE 4.—Typical employment of organic wire equipment in the heavy weapons company.

*Wire.* The wire system of the heavy weapons company is slightly more complex than that of the rifle company, and it is employed to a greater extent since the company does not make minor changes in disposition as frequently as the rifle company.

The heavy weapons company uses the same type of wire equipment as employed by the rifle company, only in greater quantities. The wire line from battalion to the company is normally installed by a battalion wire team. SB-18 switchboards are operated by both the company headquarters and the mortar platoon. EE-8 telephones are available for communication to all platoons and within the mortar platoon. One EE-8 is used for line maintenance. Sound-powered telephone equipment is utilized for wire communication within the machine gun and 75-mm rifle platoons. Since no linemen are authorized in the T/O & E, the wire system is installed, operated, and maintained by designated personnel within the company headquarters and the platoons.

*Messenger.* Messengers in the heavy weapons company are authorized as follows: four in company headquarters, two each in the machine gun and mortar platoons, and one in the 75-mm rifle platoon.

## THE BATTALION HEADQUARTERS AND HEADQUARTERS COMPANY

The communication platoon, an organic part of the battalion headquarters company, installs, operates, and maintains the communication system of the battalion down to but not including the command posts of the companies and attached units. It may establish communication with adjacent units and liaison-type aircraft.

The platoon is commanded by a communication officer who also serves as a member of the battalion commander's special staff. It is composed of a platoon headquarters, message center section, wire section, and radio and visual section. Figure 5 indicates the more detailed organization of the platoon, its transportation, and the principal items of signal equipment employed by the company.

In addition to the assigned communication personnel shown in Figure 5, other personnel have secondary communication functions. This group includes the bugler, messenger, and orderlies—all from company headquarters —and the battalion intelligence personnel.

FIGURE 5.—Organization, transportation, and principal items of equipment of the battalion communication platoon.

*Radio.* Figure 6 indicates a method of employing the battalion radio equipment to establish communication with superior, subordinate, attached, and supporting units. One of the SCR-300's at the battalion CP normally serves as the net control station (NCS) in the battalion command net. Another SCR-300 accompanies the battalion commander whenever he leaves the command post. It also operates in the battalion command net. Communication with

attached or supporting units using similar radio equipment may be established on a separate channel, using another SCR-300. Radiotelephone operators are authorized for each of the three operating SCR-300's just mentioned. Two utility SCR-300's, for which no operators are authorized, are available for replacement of inoperative equipment or for special purposes. An SCR-300 is authorized for each

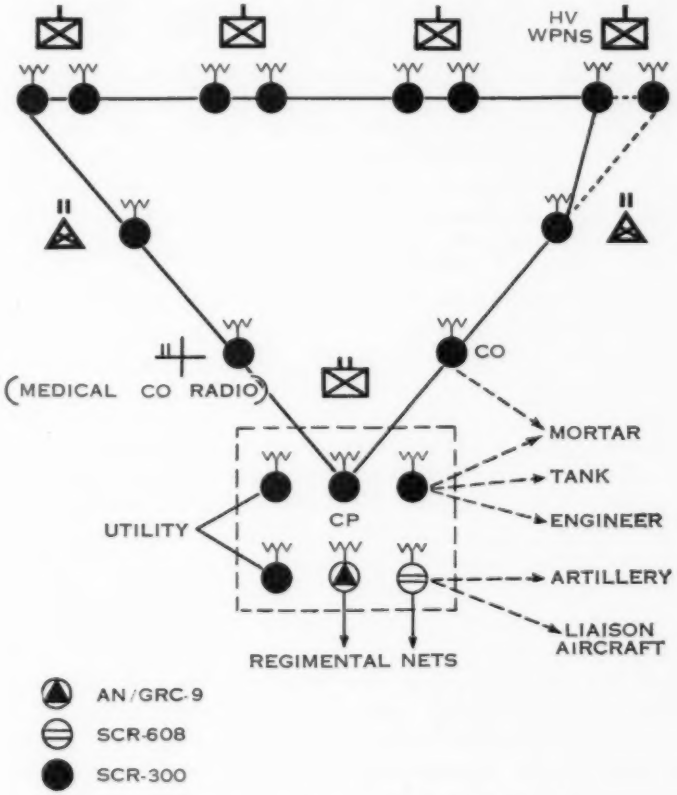



FIGURE 6—Typical radio nets in the infantry battalion.

of the two intelligence squads in the battalion intelligence section. These sets are operated by squad personnel and are normally included in the battalion command net.

An SCR-300 belonging to the attached medical platoon may be included in the battalion command net. The set is operated by a designated member of the platoon who monitors the traffic in the net. In this way, the battalion surgeon is continuously informed of the tactical situation. He also receives timely information regarding the need for medical supplies, additional aid men, and litter bearers.

The infantry battalion operates its AN/GRC-9 as a secondary station in a regimental command net composed of other AN/GRC-9's. When used as a vehicular set, the AN/GRC-9 is normally installed in the ¾-ton truck authorized for the radio and visual section; however, it may be installed and operated in other standard types of military vehicles. Three radio operators are authorized for the operation of this set. When the facilities of the message center are not available, the radio operators use the M-209 converter to encipher and decipher messages.

The SCR-608 is normally operated in a regimental voice net employing frequency-modulated radio equipment. It is also used for communication with artillery units and liaison-type aircraft equipped with similar radios. It may be used for communication with the command radios installed in tanks on any one of ten common channels when prearranged. The SCR-608 is installed in the radio and visual section's ¾-ton truck and is operated by the same personnel as the AN/GRC-9.

*Wire.* Where wire communication can be installed and maintained, it is the most effective means available in the infantry battalion. The complexity of the battalion wire system varies with the type of action. A wire system such as the one shown in Figure 7 is installed in stable situations.

The BD-72 switchboard is installed in a location convenient to incoming wire circuits and affording as much freedom from noise and interference as possible. It is operated on a 24-hour basis by the assigned switchboard operators, assisted by other members of the wire section.

Priorities are established for the installation of telephones and wire lines to subordinate and attached units. The message center telephone is the first installed within the command post. Initially, the commander and his staff officers may share telephones until time and personnel are available to complete the required installations.

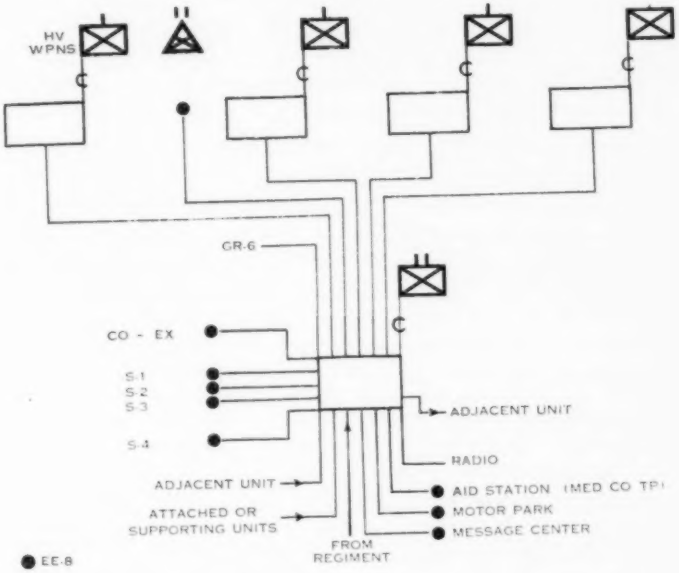



FIGURE 7.—Typical employment of organic wire equipment in the battalion headquarters company.

The wire line to the battalion observation post receives first priority, and a wire team expedites the installation of this line by using a ¼-ton truck and an RL-31 reel unit if possible. The maintenance and extension of this wire-head as the forward elements progress are about the most important functions of the battalion wire section. The OP line provides wire communication between the battalion commander and the regimental CP. It is used in the forward displacement of the battalion command post if pos-

sible and may be used in the subsequent displacement of the regimental CP. Wire lines are laid to the assault companies and the heavy weapons company as soon as possible. Thereafter, the battalion wire net is expanded to the extent necessary to provide adequate wire communication.

Two switchboards, SB-18, are available for utility use and in the displacement of the command post. Eight EE-8 telephones are employed as shown in Figure 7; four others are available for line maintenance and utility use. Eight sets of sound-powered telephone equipment are available for utility use.

*Message center.* The battalion message center is located at the natural entrance to the command post. It is operated on a 24-hour basis by the personnel of the message center section. It expedites the flow of message traffic and maintains a record of the serviceability of all communication channels. Copies of all receipted outgoing messages are retained in what is known as a dead file. The dead file is turned over to the S-1 periodically to facilitate entry of messages in the unit journal.

The message center section includes both foot and motor messengers who maintain messenger communication with the regimental command post and those of adjacent, attached, and supporting units. They are employed as special messengers; scheduled messenger service is not established by the infantry battalion.

*Other means.* Visual and sound communication are employed as previously explained; however, an additional channel for air-ground communication is available to the battalion. Panel sets, AP-30-C and AP-30-D, for use on light and dark backgrounds respectively, may be used for transmitting short messages to aircraft or identifying particular units using panel recognition codes included in signal operation instructions. The radio and visual section is responsible for the operation of the panel ground; however, available communication personnel around the command post are used to augment the radio personnel in completing the panel team.

## SUMMARY

The success of military operations depends largely upon the ability of the commander to maintain control and direct the actions of his forces at all times. His communication system is the link through which this is accomplished. Flexibility is the key to an efficient and adequate communication system. The employment of the means of communication as described in this article will not apply to all tactical situations. It is intended as a guide only. Commanders vary the employment of the available means in order to insure the most efficient communication in each situation. Consideration must be given to the capabilities and limitations of the various means in the formulation of the communication plan. A knowledge of the characteristics of available signal equipment is essential.

Approximately 12 percent of the enlisted personnel in the infantry battalion have primary duty assignments in communication. Many other men must be trained to assist in the installation, operation, and maintenance of the communication system. The training of understudies for communication specialists must be continuous. Most of this training can be accomplished through unit schools; however, the training of some specialists such as communication chiefs and radio repairmen is more easily effected in technical courses at the service schools.

Most of the presently authorized signal equipment described herein was used with considerable success during World War II; however, many of the items have undesirable features which are being corrected in the current research and development program. Miniaturization and standardization are receiving much emphasis. A major objective of the program is a reduction in the number of items of equipment by increasing the capabilities and application of each new item.

## Defensive Terrain

From a military viewpoint, terrain is any land area considered in relation to its use for military purposes. Every tactical operation is, of necessity, influenced by terrain features such as lakes, rivers, and streams; mountains, hills, and ridges; and open or wooded areas. In addition, such man-made features as villages and towns; roads and railroads; bridges, and air fields must be considered. The degree to which these terrain features influence military operations depends to a large extent upon climatic conditions. Terrain favorable for a military operation in good weather may become unfavorable under the effects of rain or snow; a swamp or a river which is an obstacle in summer may be a good avenue of approach in winter when it is frozen.

Every successful commander must have the ability to determine the influence of the terrain on whatever military operations are contemplated by his forces and on those operations which the enemy forces may undertake. Determining the influence of the terrain is not a technical matter governed by a definite set of rules; on the contrary, it involves application of one's judgement as to the relative importance of several different factors.

The analysis of an area of probable military operations to determine the effect of the terrain on the lines of action open to opposing forces in the area is called *terrain evaluation.* It should be borne in mind, however, that terrain is only one of the factors—though the basic one—that enters into a tactical estimate of a defensive situation. The relative importance of the terrain will vary between wide limits in different situations. No matter what the type of terrain and no matter what the tactical situation, terrain is always evaluated in terms of observation, fields of fire,

concealment and cover, obstacles, and communication.

*Observation* is the most important factor in judging the influence of terrain on military operations. Observation of the battlefield is essential in order to bring effective fire to bear upon the enemy, to control the maneuver of friendly troops, and to prevent being surprised by the enemy. The best observation is that secured from terrain which affords both long-range observation into enemy-held terrain and close-in observation of the hostile forward elements.

Long-range observation is usually found near the topographical crest of the terrain being organized, while close-in observation is obtained from terrain near the military crest. The defender's position should provide observation of likely avenues of approach for both foot and mechanized forces as well as observation of friendly supporting fires.

*Fields of fire* are all-important to the defense. An ideal field of fire for infantry is an open stretch of ground which affords neither cover nor concealment for the enemy. An ideal field of fire is rarely realized, however, and usually fields of fire must be improved by cutting or burning vegetation, clearing brush and trees, demolishing buildings, or cutting lanes. The time and labor involved in this work must be carefully considered as well as its effect on concealment.

Open terrain affords good fields of fire and allows a unit to defend a wider front, while close terrain offers poor fields of fire and requires more troops and weapons to occupy the same frontage. North Africa is a good example of open terrain where the troops had long and open fields of fire. In contrast, those troops fighting in the jungles of Bougainville and New Guinea had very poor fields of fire and had to cut fire lanes in practically every position.

*Concealment and cover.* Unconcealed installations and troops invite disaster. In organizing a defensive position every means is employed to conceal the position from the enemy. Cover—protection from fire—is provided either by skillful use of terrain or by artificial means. The terrain and vegetation determines the amount of concealment and

cover that can be obtained in any one area. Close, wooded terrain offers good concealment and cover but limits observation and fields of fire; open terrain affords good observation and fields of fire but gives little natural concealment and cover. Even very open terrain, however, usually affords some concealment and cover through folds in the ground and the sparse vegetation that normally exists.

Regardless of the natural concealment and cover, troops organizing a defensive position must be allowed sufficient time to dig in, to construct overhead cover, and to conceal their positions. Because the time required will vary directly with the type of terrain, this factor is given careful consideration by the commander responsible for organizing the position.

*Obstacles* are obstructions to the movement of military forces. Some common natural obstacles are mountains, rivers, marshes, gullies, steep inclines, and heavily wooded areas. In analyzing terrain for a defensive operation consideration is given to areas containing natural obstacles and to those areas suitable for construction of artificial obstacles. Antitank and antipersonnel mines, barbed wire, tank ditches, or other artificial obstacles are used to connect natural obstacles to form a continous barrier across the entire front. These obstacles as well as natural obstacles, however, are not effective unless they are covered with fire.

*Communication.* In making a terrain analysis for a defensive operation a commander selects that position which gives the best routes forward for foot and mechanized forces. Concealed or covered routes into the position are essential for the movement of troops and supplies. The facility with which routes of communication of all kinds are used in daylight depends not only upon their condition but also upon the extent to which they are concealed from hostile air and ground observation. Lacking concealed routes, means must be devised to blind the enemy observation. As counterattack is a decisive element of defensive combat, concealed routes must be available for movement of troops into counterattack position. Existing routes are used

to the maximum. Terrain definitely dictates the volume of movement forward to the main line of resistance and determines whether the movement will be difficult or relatively easy.

The battle of Cassino is an outstanding example of the proper use of terrain for defense. The series of hills rising abruptly above the flat Liri Valley provided the German defenders excellent observation of the entire battlefield. The flat rolling ground in front of the Rapido River provided excellent fields of fire for all types of defensive weapons. The defenders had almost perfect concealment and cover in the tree-covered mountains. The Rapido River ran swiftly between the town of Cassino and Mount Abby Cassino, which rose directly overhead, providing a natural obstacle to the attacker. In addition, antitank and antipersonnel mines, barbed wire, tank ditches, and other barriers were placed in front of the Rapido River to make the position more nearly impregnable. The defenders had available numerous routes of communication to their front-line positions.

Cassino was taken, but it took two Allied Corps four months to do the job with the aid of all of the artillery and air support that could be mustered. Air preparations against Cassino were the most intensive that the Allies had thrown against any position up to that time. Approximately 1,400 tons of bombs were dropped on the position in one raid. Before the Germans were routed, the entire town as well as the Mount Abbey Cassino had been destroyed. The tenacious defense of Cassino would not have been possible without suitable defensive terrain and the knowledge of how to evaluate and use this terrain to the best advantage.

## USE OF TERRAIN FOR DEFENSE

A study of terrain in any defensive area will disclose certain localities of primary importance. These localities, for units up to the regiment, are usually elevations (dominant terrain) within the battle position which afford commanding observation. For units larger than the regiment these localities may be elevations, roads, railroads, bridges,

villages, or woods located in rear of the battle position. Such localities are usually referred to as *key points* or *key terrain*. Their possession has a marked influence upon military operations in the area.

The importance of key points or key terrain will vary with the size of the unit involved. It is apparent that the point of view of the division commander, for example, will differ from that of the company commander. Each thinks of terrain along the same logical lines, but applies a different scale. The division commander may give only passing thought to localities which are vital from the standpoint of the company commander. To successfully accomplish his mission a commander should consider terrain from three different viewpoints: first, that of the next higher commander, whose scheme of maneuver he must absorb before he can plan his own action; second, that of his own command, in order that he may plan his part adequately; and third, that of his unit commanders, to whom he assigns specific missions, usually in terms of the terrain.

All extensive terrain except flat plains and desert or swamp lands is divided into smaller areas by ridges, woods, bodies of water, or towns. Where terrain features limit ground observation into an area on at least two opposite sides, the enclosed area is called a terrain compartment. Terrain compartments are of all sizes and shapes—they may be simple or they may be complex, with the interior of the compartment subdivided into smaller compartments. A compartment whose longer axis extends in the direction of movement of a force or leads toward or into a defensive position is called a *corridor*. A compartment whose longer axis is perpendicular to the direction of movement of a force is called a *cross-compartment*.

Two compartments formed by three ridges and two valleys are shown in figure 1. An observer located at O is unable to see into the area IFGD. Thus we have a compartment.

The presence of a corridor leading into a defensive position provides a most advantageous approach for an attacking force; a cross-compartment in front of the defensive

position forms the terrain basis for a strong defensive position. This is illustrated in figure 1. A unit defending the ridge DEF against an atttack from the west is defending a cross-compartment. Notice that the unit has complete lateral observation of the battle position and can place direct flanking fire on any threat to the position. Assume for a moment that the enemy makes a determined effort and suc-

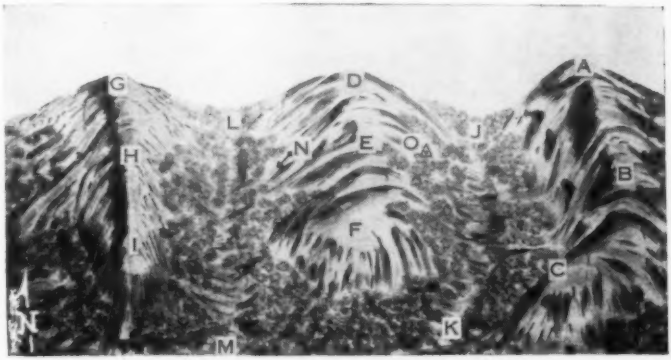



FIGURE 1.

ceeds in making a penetration at E. This penetration can be immediately neutralized by direct flat-trajectory fire from positions at D and F. Further advantages to the position are that depth may be gained by placing troops along the ridge ABC to support the main line of resistance with direct fire; the movement of reserves is concealed and covered by the ridge ABC; and the attacker has the disadvantage of attacking up a slope and crossing the natural barriers DEF and ABC.

Suppose now that the unit is defending along the general line IFC against an attack from the south, and the attacker makes a penetration at M. This penetration immediately becomes a serious menace to the defending force because there is no natural obstacle in its path, and the corridor LM offers the attacker excellent concealment and cover which limit

the defender's fire and observation. Perhaps the most serious factor in the situation, however, is the inability of the defender to bring additional direct fire to bear on this threat because the crest of the noses at I and F prohibits fire on the target from positions along the main line of resistance outside the corridor LM. Further, it would be extremely difficult for the defender to move reserves into position for a counterattack. A penetration toward L also subjects the positions at I and F to the threat of a flanking attack.

From the viewpoint of terrain factors, it is obvious that an attack through a corridor is much more likely to succeed than an attack over a cross-compartment.

## BOUNDARIES AND LIMITING POINTS

A battalion under normal circumstances can defend an area 1,200 to 2,400 yards wide and 800 to 1,400 yards deep. The lesser of these two figures usually applies to close terrain, and the larger to open terrain. The exact defensive sector assigned a battalion is designated by regiment and is indicated by boundaries on the flanks of the position, by limiting points, and by an extension of the boundaries to the front and rear.

The limiting points placed on the boundaries determine the general trace of the main line of resistance, and unit commanders coordinate their defense at these points. They are designated at some easily identifiable terrain feature so that they can be found quickly by unit commanders. The unit commanders are not required to defend exactly at the limiting points, but they select the best defensive position in the immediate vicinity so long as they can support and be supported by the adjacent unit.

From the standpoint of the most advantageous use of terrain, boundaries between units in defense should neither follow the limiting features of corridors nor the lines of probable enemy approach, but they should be situated somewhere between the two to secure unity of command along the most dangerous avenues of approach to key terrain features. For this reason boundaries will usually be located on slopes within corridors, when the unit is defending cor-

ridors. The terrain exerts less influence on the location of boundaries when the defense is cross-compartment. Referring again to figure 1, it can be seen that when defending a cross-compartment, the subordinate units have fairly equal advantages of observation, fields of fire, and mutual support regardless of where the commander places the boundary. Such would not be the case, however, with the unit defending a corridor. In this situation, the assignment of boundaries is a major factor in the organization of the defense.

## SUMMARY

Ground and air reconnaissance, supplemented by maps and aerial photographs give knowledge of the terrain. After a thorough terrain study is made the features are evaluated from a military point of view. The area is divided into natural subareas, or if there are no distinctive natural boundaries, it is divided into subareas according to tactical considerations. Within each subarea, terrain features affecting the military situation are considered both from the enemy's point of view and from our own. Each terrain feature is evaluated in terms of the five terrain factors: observation, fields of fire, concealment and cover, obstacles, and communication. When studying these factors the commander must keep firmly in mind the following:

1. Cross-compartments are more easily defended than corridors because they allow greater flexibility of defensive fires.
2. Terrain corridors limit the lateral observation of the defense and divide defensive fire power into groups which cannot support each other with direct fire.
3. Corridors favor the attacker in that they limit the flexibility of defensive fires and offer the attacker an avenue of approach which facilitates infiltration and penetration.
4. Boundaries between units should neither follow ridge lines nor drainage lines, but should be located between these lines to insure unity of command in defending key terrain and to cover the likely avenues of enemy approach.

When all of the above factors have been considered the commander makes his decision as to the disposition and employment of his troops, keeping in mind the assigned mission and the enemy's capabilities. The success of any tactical operation depends to a large degree on the proper use of the terrain and a proper analysis of its effect on operations.

## PRACTICAL EXERCISE

To test yourself on terrain evaluation, offered below is a practical exercise dealing with the tactical employment of an infantry battalion in the organization of an interior front-line defensive area. The exercise is based upon the information contained in the article you have just read and it will serve, in some measure, to illustrate the principles involved in evaluating terrain in a defensive situation.

A copy of the photo map to be used with this exercise is inserted at the rear of the QUARTERLY. It is suggested that you refer to this map and arrive at your decision on each requirement before comparing your answer with the solution.

## SITUATION

Map: Overprinted Photo Map (Inserted at rear of QUARTERLY)

The 1st Battalion, 1st Infantry is taking up an interior defensive position within the boundaries indicated. As Lt Col 1st Battalion, you are faced with the following decisions:

## QUESTIONS

1. The most likely avenues of approach for enemy foot troops in the day time are: (Choose two)

*a.* 15
*b.* 26
*c.* 27
*d.* 11

2. The best approaches for enemy foot troops at night are: (Choose two)

*a.* 28
*b.* 15
*c.* 16
*d.* 26

3. The best approaches for enemy mechanized vehicles are: (Choose two)

*a.* 27
*b.* 16
*c.* 28
*d.* 13

4. Enemy observation into the position can be obtained from: (Choose two)

*a.* 12
*b.* 11 X
*c.* 13
*d.* 10

5. The locations in the forward area of the 1st Battalion position that afford the best concealment and cover are: (Choose two)

*a.* 6
*b.* 8
*c.* 21
*d.* 22

6. The locations in the forward areas of the 1st Battalion battle position that afford good fields of fire are: (Choose two)

*a.* 20
*b.* 8
*c.* 9
*d.* 21

7. The best routes of communication from the rear to the front are: (Choose two)

*a.* The road along 23.
*b.* The road between 2 and 3 down to 7.
*c.* The road to the west of 3.
*d.* The road through 29.

8. Possible natural tank obstacles are located at: (Choose two)

*a.* 15 and 16
*b.* 11X and 11
*c.* 28 and 26
*d.* 27

9. The terrain in front of the battle position offers the enemy: (Choose two)

*a.* Concealed and covered routes of approach to Sweney Hill and Rossell Ridge.
*b.* Good routes of supply.
*c.* An excellent corridor that leads into the position.
*d.* Good tank approaches.

10. The key point in the battalion area is: (Choose one)

*a.* 8
*b.* 9
*c.* 21
*d.* 1

11. The most likely area of penetration is: (Choose one)

*a.* 8 and 6
*b.* 9 and 7
*c.* 21 and 22
*d.* 20 and 23

12. The frontage assigned the 1st Battalion is approximately: (Choose one)

*a.* 1000 yards
*b.* 2000 yards
*c.* 1400 yards
*d.* 1800 yards

13. Reserves should be placed along the line: (Choose one)

*a.* 2, 1, and 23
*b.* 3, 25, and 23
*c.* 3, 1, and 24
*d.* 3, 2, and 25

## A SOLUTION

1. *a* and *d*

It is important that foot troops advancing during the daytime have concealment and cover. To gain this con-

cealment and cover it would be necessary for the enemy to advance through the wooded areas of 15 and 11. An approach through 26 and 27 could be seen from 8 and 9.

2. *a* and *d*

It is necessary to have more control over troops at night than in the daytime; therefore, areas 28 and 26 offer the best routes for an advance at night. The advantage of concealment afforded by 15 and 16 is not necessary at night, and an advance down the road at 27 is unsound as unobserved fire is sure to be registered on the road.

3. *a* and *c*

The best terrain for operation of mechanized vehicles is down the road at 27 and near the open ground at 28. An advance through the woods at 13 and 16 would slow the tanks down.

4. *a* and *d*

The best close-in observation of the position is afforded the enemy from positions at 12 and 10. These areas are on high ground in front of the position and can be approached from the rear. The areas at 11X and 13 are low ground and afford no observation into the position.

5. *c* and *d*

The best concealment and cover in the forward area of the position is found at 21 and 22. This is a wooded area that offers overhead concealment from the air and is also free from ground observation. The areas at 8 and 6 are on high ground and can be observed by the enemy.

6. *b* and *c*

The best fields of fire in the forward area of the battle position are at 8 and 9. These positions are on high ground which provide the front-line troops several hundred yards of grazing fire. Because of the trees and foliage the positions at 20 and 21 offer very poor fields of fire.

7. *a* and *b*

The best concealed routes to the position are the roads through 23 and between 2 and 3 up to 7. There is very little concealment on the road to the left of 3, and the road through 29 runs over high ground and terminates in the low ground at 21.

8. *a* and *b*

Natural tank obstacles exist at 15 and 16 and 11X and 11 in the form of heavily wooded areas. Tanks using these approaches would be slowed down considerably. Area 27 provides a good approach for armor on the road. Areas 28 and 26, being fairly open, offer a fair tank approach.

9. *a* and *c*

An evaluation of the terrain in front of the position indicates that the enemy has good routes of approach to Sweney Hill and Rossell Ridge. The cover and concealment existing to the rear of these terrain features provide several excellent approaches for foot troops.

A corridor runs into the position generally along a line through 15, 16, and 21. It also gives good concealment. Both of these factors offer definite advantages to the enemy.

Enemy supply routes and tank approaches are limited due to the single road in the area and the heavy wooded areas.

10. *d*

The dominant terrain feature in this defensive position is Kelley Hill at Point 1. This hill is the key to the entire position and its possession by the enemy would influence the action in his favor. For this reason the MLR has been placed well forward of it on the next terrain feature at 8, 9, and 21.

11. *c*

The most likely area of penetration into the position is up the corridor at 21 and 22. This corridor gives good concealment and cover to the enemy and is the most difficult terrain for the defender to defend. The other areas provide approaches that can be observed by the defender.

12. *c*

The battalion is defending an area 1400 yards wide. This is determined simply by measuring between the two limiting points and comparing the measured distance with the map scale.

13. *a*

The reserve company should organize on high ground within the position where it can add depth to the defense and protect the rear. To do this, platoons of the reserve company are located on the high ground at 2, 1, and 23. The line formed by 3, 25, and 23 offers some high ground but it is not the best location because it does not take the maximum advantage of the high ground at Kelley Hill. The line formed by 3, 1, and 24 has the disadvantage of placing the platoon on the right flank on low ground at 24. The line formed by 3, 2, and 25 does not place a platoon in a position to cover the right flank.

End.